APPENDIX C

COMMUNITY RISK ASSESSMENT

965 WEEKS STREET CONSTRUCTION & OPERATIONAL COMMUNITY RISK ASSESSMENT

East Palo Alto, California

September 19, 2019

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Introduction

The purpose of this report is to address the potential construction community risk impacts associated with the construction of the proposed affordable housing project located at 965 Weeks Street in East Palo Alto, California. The impact of existing sources of toxic air containments (TACs) upon the project site are also addressed. The analysis was conducted following guidance provided by the Bay Area Air Quality Management District (BAAQMD).[1] The BAAQMD recommends using a 1,000-foot screening radius around a project site for purposes of identifying community health risk from siting a new source of TACs.

Project Description

The 965 Weeks Street Affordable Housing Project is the construction and operation of a four-story, 136-unit affordable apartment complex and parking garage on a vacant site. The proposed project consists of 126,000 square feet (sf) with apartments, office spaces for property management and resident services staff, as well as community amenity spaces including a community room with kitchen, outdoor play areas, and space for an after-school program for resident children. The proposed project would provide housing for 442 persons with affordability levels between 30 percent and 60 percent of area median income. The proposed apartments will include four studio units, 23 one-bedroom units, 75 two-bedroom units, 19 three-bedroom units, and 15 four-bedroom units.

The proposed five-level parking garage abuts the western property line and extends toward the middle of the project site. The 76,950sf garage structure is five levels with open air parking on the top (roof) level and is surrounded by residential and common-space components. A total of 215 parking spaces are provided. A series of courtyards and pathways provide internal connections between the residential components with open- and common-space areas on the site. Central walkways and activity areas will be open to the public. The proposed project would add approximately 75,000 sf of impervious surfaces to the site, assuming all building footprint, walkways, and surface parking are all impervious.

The proposed project will utilize drought tolerant plantings, energy efficient light fixtures and appliances will be used as much as possible and will be designed to meet the minimum requirements to certify the project through the Greenpoint Rating Program. Per the applicant, construction is anticipated to start in 2020 with a duration of 18 months. The first 12 months would involve heavy-duty equipment and earthwork, while the remaining six months would be interior work. Full occupancy is expected by 2022.

Setting

The project is located in San Mateo County, which is in the San Francisco Bay Area Air Basin. Ambient air quality standards have been established at both the State and federal level. The Bay Area meets all ambient air quality standards with the exception of ground-level ozone, respirable particulate matter (PM_{10}), and fine particulate matter ($PM_{2.5}$).

[1] Bay Area Air Quality Management District, *CEQA Air Quality Guidelines*, May 2017.

Toxic Air Contaminants

Toxic air contaminants (TAC) are a broad class of compounds known to cause morbidity or mortality (usually because they cause cancer) and include, but are not limited to, the criteria air pollutants. TACs are found in ambient air, especially in urban areas, and are caused by industry, agriculture, fuel combustion, and commercial operations (e.g., dry cleaners). TACs are typically found in low concentrations, even near their source (e.g., diesel particulate matter [DPM] near a freeway). Because chronic exposure can result in adverse health effects, TACs are regulated at the regional, State, and federal level.

Diesel exhaust is the predominant TAC in urban air and is estimated to represent about three-quarters of the cancer risk from TACs (based on the Bay Area average). According to the California Air Resources Board (CARB), diesel exhaust is a complex mixture of gases, vapors, and fine particles. This complexity makes the evaluation of health effects of diesel exhaust a complex scientific issue. Some of the chemicals in diesel exhaust, such as benzene and formaldehyde, have been previously identified as TACs by CARB, and are listed as carcinogens either under the State's Proposition 65 or under the Federal Hazardous Air Pollutants programs.

Regulatory Agencies

The BAAQMD is the regional agency tasked with managing air quality in the region. At the State level, the CARB (a part of the California Environmental Protection Agency [EPA]) oversees regional air district activities and regulates air quality at the State level. The BAAQMD has recently published California Environmental Quality Act (CEQA) Air Quality Guidelines that are used in this assessment to evaluate air quality impacts of projects.

Sensitive Receptors

There are groups of people more affected by air pollution than others. CARB has identified the following persons who are most likely to be affected by air pollution: children under 16, the elderly over 65, athletes, and people with cardiovascular and chronic respiratory diseases. These groups are classified as sensitive receptors. Locations that may contain a high concentration of these sensitive population groups include residential areas, hospitals, daycare facilities, elder care facilities, and elementary schools. For cancer risk assessments, children are the most sensitive receptors, since they are more susceptible to cancer causing TACs. Residential locations are assumed to include infants and small children. The closest sensitive receptors to the project site are single-family homes adjacent to the western and northern project site boundaries. There are additional residences to the south, east, and west of the project site.

Regulatory Setting

Federal Regulations

The United States Environmental Protection Agency (EPA) sets nationwide emission standards for mobile sources, which include on-road (highway) motor vehicles such trucks, buses, and automobiles, and non-road (off-road) vehicles and equipment used in construction, agricultural,

industrial, and mining activities (such as bulldozers and loaders). The EPA also sets nationwide fuel standards. California also has the ability to set motor vehicle emission standards and standards for fuel used in California, as long as they are the same or more stringent than the federal standards.

The EPA has established a number of emission standards for on- and non-road heavy-duty diesel engines used in trucks and other equipment. This was done in part because diesel engines are a significant source of NO_X and particulate matter (PM_{10} and $PM_{2.5}$) and because the EPA has identified DPM as a probable carcinogen. Implementation of the heavy-duty diesel on-road vehicle standards and the non-road diesel engine standards are estimated to reduce particulate matter and NO_X emissions from diesel engines up to 95 percent in 2030 when the heavy-duty vehicle fleet is completely replaced with newer heavy-duty vehicles that comply with these emission standards.[2]

In concert with the diesel engine emission standards, the EPA has also substantially reduced the amount of sulfur allowed in diesel fuels. The sulfur contained in diesel fuel is a substantial contributor to the formation of particulate matter in diesel-fueled engine exhaust. The current standards reduced the amount of sulfur allowed by 97 percent for highway diesel fuel (from 500 parts per million by weight [ppmw] to 15 ppmw), and by 99 percent for off-highway diesel fuel (from about 3,000 ppmw to 15 ppmw). The low sulfur highway fuel (15 ppmw sulfur), also called ultra-low sulfur diesel (ULSD), is currently required for use by all vehicles in the U.S.

All of the above federal diesel engine and diesel fuel requirements have been adopted by California, in some cases with modifications making the requirements more stringent or the implementation dates sooner.

State Regulations

To address the issue of diesel emissions in the state, CARB developed the Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles.[3] In addition to requiring more stringent emission standards for new on-road and off-road mobile sources and stationary diesel-fueled engines to reduce particulate matter emissions by 90 percent, a significant component of the plan involves application of emission control strategies to existing diesel vehicles and equipment. Many of the measures of the Diesel Risk Reduction Plan have been approved and adopted, including the federal on-road and non-road diesel engine emission standards for new engines, as well as adoption of regulations for low sulfur fuel in California.

CARB has adopted and implemented a number of regulations for stationary and mobile sources to reduce emissions of DPM. Several of these regulatory programs affect medium and heavy-duty diesel trucks that represent the bulk of DPM emissions from California highways. CARB regulations require on-road diesel trucks to be retrofitted with particulate matter controls or replaced to meet 2010 or later engine standards that have much lower DPM and $PM_{2.5}$

[2] USEPA, 2000. *Regulatory Announcement, Heavy-Duty Engine and Vehicle Standards and Highway Diesel Fuel Sulfur Control Requirements*. EPA420-F-00-057. December.

[3] California Air Resources Board, 2000. *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles*. October.

emissions. This regulation will substantially reduce these emissions between 2013 and 2023. While new trucks and buses will meet strict federal standards, this measure is intended to accelerate the rate at which the fleet either turns over so there are more cleaner vehicles on the road or is retrofitted to meet similar standards. With this regulation, older, more polluting trucks would be removed from the roads sooner.

CARB has also adopted and implemented regulations to reduce DPM and NO_X emissions from in-use (existing) and new off-road heavy-duty diesel vehicles (e.g., loaders, tractors, bulldozers, backhoes, off-highway trucks, etc.). The regulations apply to diesel-powered off-road vehicles with engines 25 horsepower (hp) or greater. The regulations are intended to reduce particulate matter and NO_X exhaust emissions by requiring owners to turn over their fleet (replace older equipment with newer equipment) or retrofit existing equipment in order to achieve specified fleet-averaged emission rates. Implementation of this regulation, in conjunction with stringent federal off-road equipment engine emission limits for new vehicles, will significantly reduce emissions of DPM and NO_X.

Bay Area Air Quality Management District (BAAQMD)

BAAQMD has jurisdiction over an approximately 5,600-square mile area, commonly referred to as the San Francisco Bay Area (Bay Area). The District's boundary encompasses the nine San Francisco Bay Area counties, including Alameda County, Contra Costa County, Marin County, San Francisco County, San Mateo County, Santa Clara County, Napa County, southwestern Solano County, and southern Sonoma County.

BAAQMD is the lead agency in developing plans to address attainment and maintenance of the National Ambient Air Quality Standards and California Ambient Air Quality Standards. The District also has permit authority over most types of stationary equipment utilized for the proposed project. The BAAQMD is responsible for permitting and inspection of stationary sources; enforcement of regulations, including setting fees, levying fines, and enforcement actions; and ensuring that public nuisances are minimized.

The BAAQMD California Environmental Quality Act (*CEQA) Air Quality Guidelines*[4] were prepared to assist in the evaluation of air quality impacts of projects and plans proposed within the Bay Area. The guidelines provide recommended procedures for evaluating potential air impacts during the environmental review process consistent with CEQA requirements including thresholds of significance, mitigation measures, and background air quality information. They also include assessment methodologies for air toxics, odors, and greenhouse gas emissions.

Vista 2035 East Palo Alto General Plan

On October 4, 2016, the City of East Palo Alto adopted the Vista 2035 East Palo Alto General Plan, which was an update to the City's 1999 General Plan and Zoning Ordinance.[5] The final version was published March 2017. The General Plan is the foundation for establishing goals,

[4] Bay Area Air Quality Management District, 2017. *CEQA Air Quality Guidelines*. May.
[5] City of East Palo Alto, 2017. *Vista 2035 East Palo Alto General Plan*. March. Web: http://www.ci.east-palo-alto.ca.us/DocumentCenter/View/3187

purposes, zoning and activities allowed on each land parcel to provide compatibility and continuity to the entire region as well as each individual neighborhood. This general plan includes goals and policies to improve air quality within East Palo Alto. The following goal and policy apply to the project.

Goal HE-4. **Safely and systemically address toxics, legacy pollutants, and hazardous materials**

Intent: To protect residents and visitors against harmful health and other impacts associated with dangerous materials that may pose a threat to life and property, and may dictate costly public improvements. Reduction or elimination of these hazards can be accomplished with concerted efforts.

Policies:

4.2 Pollutants. Continue to work with state, federal, regional, and local agencies to eliminate and reduce concentrations of regulated legacy pollutants

Ravenswood/4 Corners Transit Oriented Development (TOD) Specific Plan

The Ravenswood and 4 Corners TOD Specific Plan is a document that outlines and provides detailed regulations for how this district will develop and expand in the near future.[6] This specific plan focuses on development (i.e. residential and commercial uses) that is near transit stops and improves proximity to services. The following performance standard is applicable to the project.

Air Contaminants: No smoke, soot, flash, dust, cinders, direct, acids, fumes, vapors, odors, toxic, or radioactive substances waste or particulate, solid, liquid, or gaseous matter shall be introduced into the outdoor atmosphere, alone or in any combination, in a quantity or at a duration that interferes with safe occupancy of the site or surrounding sites. In addition, all uses shall be subject to any emission limits determined by BAAQMD

Sensitive Receptors

There are groups of people more affected by air pollution than others. CARB has identified the following persons who are most likely to be affected by air pollution: children under 16, the elderly over 65, athletes, and people with cardiovascular and chronic respiratory diseases. These groups are classified as sensitive receptors. Locations that may contain a high concentration of these sensitive population groups include residential areas, hospitals, daycare facilities, elder care facilities, and elementary schools. The closest sensitive receptors to the project are single-family homes adjacent to the western and eastern boundary of the project site. There are additional

[6] City of East Palo Alto, 2013.*Ravenswood / 4 Corners TOD Specific Plan.* February. Web: https://www.ci.east-palo-alto.ca.us/Archive/ViewFile/Item/125

residences near the project site, including those across the Bay Road to the north and across Weeks Street to the south.

Significance Thresholds

In June 2010, BAAQMD adopted thresholds of significance to assist in the review of projects under CEQA and these significance thresholds were contained in the District's 2011 *CEQA Air Quality Guidelines*. These thresholds were designed to establish the level at which BAAQMD believed air pollution emissions would cause significant environmental impacts under CEQA. The thresholds were challenged through a series of court challenges and were mostly upheld. BAAQMD updated the *CEQA Air Quality Guidelines* in 2017 to include the latest significance thresholds that were used in this analysis are summarized in Table 1.

Table 1. Community Risk Significance Thresholds

Health Risks and Hazards	Single Sources Within 1,000-foot Zone of Influence	Combined Sources (Cumulative from all sources within 1,000-foot zone of influence)
Excess Cancer Risk	>10.0 per one million	>100 per one million
Hazard Index	>1.0	>10.0
Incremental annual $PM_{2.5}$	>0.3 µg/m^3	>0.8 µg/m^3
Note: PM_{10} = course particulate matter or particulates with an aerodynamic diameter of 10 micrometers (µm) or less, $PM_{2.5}$ = fine particulate matter or particulates with an aerodynamic diameter of 2.5µm or less. GHG = greenhouse gases.		

Community Risk Impacts and Mitigation Measures

Project impacts related to increased community risk can occur either by generating emissions of TACs and air pollutants during construction and operation and by introducing a new sensitive receptor, such as a residential use, in proximity to an existing source of TACs. Temporary project construction activity would also generate dust and equipment exhaust on a temporary basis that could affect nearby sensitive receptors. A construction community health risk assessment was prepared to address project construction impacts on the surrounding off-site sensitive receptors. Operation of the project is not expected to be a source of TAC or localized air sources of emissions, such as generators powered by diesel engines.

Additionally, the project would introduce new residents that are sensitive receptors, who would be exposed to existing sources of TACS and localized air pollutants in the vicinity of the project. Therefore, the impact of the existing sources of TAC upon the existing sensitive receptors and new incoming sensitive receptors was assessed. Note that additional analysis is for informational purposes only.

Community risk impacts are addressed by predicting increased lifetime cancer risk, the increase in annual $PM_{2.5}$ concentrations and computing the Hazard Index (HI) for non-cancer health risks. Construction equipment and associated heavy-duty truck traffic generates diesel exhaust, which is a known TAC. These exhaust emissions pose health risks for sensitive receptors such as surrounding residents. The primary community risk impact issues associated with construction emissions are cancer risk and exposure to $PM_{2.5}$. A health risk assessment of the project construction activities was conducted that evaluated potential health effects to nearby sensitive receptors from construction emissions of DPM and $PM_{2.5}$.[7] This assessment included dispersion modeling to predict the offsite and onsite concentrations resulting from project construction, so that lifetime cancer risks and non-cancer health effects could be evaluated. The methodology for computing community risks impacts is contained in *Attachment 1*.

CalEEMod Modeling

The California Emissions Estimator Model (CalEEMod) Version 2016.3.2 was used to estimate emissions from construction of the site assuming full build-out of the project. The CalEEMod modeling was performed by EMC Planning Group. The provided model output from CalEEMod is included as *Attachment 2*.

CalEEMod provided annual emissions for both on- and off-site construction activities. On-site activities are primarily made up of construction equipment emissions, while off-site activity includes worker, hauling, and vendor traffic. A construction build-out scenario, including equipment list and schedule, was based on CalEEMod defaults. Construction of the project was predicted to begin January 2020 and last 12 months.[8] There were an estimated 249 workdays.

[7] DPM is identified by California as a toxic air contaminant due to the potential to cause cancer.

[8] Note that even though CalEEMod predicts a shorter construction period than what is anticipated (i.e. 18 months) the results from the community risk analysis would remain the same. As mentioned above, the final six months of the 18 month period would consist of interior work, which would result in low construction emissions since heavy duty equipment and earthwork are not involved.

There is no demolition phase since the project site is vacant. The proposed project land uses were modeled as follows:

- 136 dwelling units entered as "Apartments Mid Rise" on 1.4 acres
- 76,950 sf entered as "Enclosed Parking with Elevator" on 0.46 acres
- 29,839 sf entered as "Other Non-Asphalt Surfaces"

The CalEEMod model provided total annual PM_{10} exhaust emissions (assumed to be DPM) for the off-road construction equipment and for exhaust emissions from on-road vehicles, with total emissions from all construction stages as 0.1127 tons (226 pounds). The on-road emissions are a result of haul truck travel during demolition and grading activities, worker travel, and vendor deliveries during construction. A trip length of one mile was used to represent vehicle travel while at or near the construction site. It was assumed that these emissions from on-road vehicles traveling at or near the site would occur at the construction site. Fugitive $PM_{2.5}$ dust emissions were calculated by CalEEMod as 0.01452 tons (29 pounds) for the overall construction period.

Dispersion Modeling

The U.S. EPA AERMOD dispersion model was used to predict concentrations of DPM and $PM_{2.5}$ at sensitive receptors (residences) in the vicinity of the project construction area. The AERMOD dispersion model is a BAAQMD-recommended model for use in modeling analysis of these types of emission activities for CEQA projects.[9] For the construction site modeled, the modeling utilized two area sources to represent the on-site construction emissions, one for exhaust emissions and one for fugitive dust emissions. To represent the construction equipment exhaust emissions, an emission release height of 6 meters (19.7 feet) was used for the area sources. The elevated source height reflects the height of the equipment exhaust pipes plus an additional distance for the height of the exhaust plume above the exhaust pipes to account for plume rise of the exhaust gases. For modeling fugitive $PM_{2.5}$ emissions, a near-ground level release height of 2 meters (6.6 feet) was used for the area sources. Emissions from the construction equipment and on-road vehicle travel were distributed throughout the modeled area sources. Construction emissions were modeled as occurring daily between 7 a.m. to 6 p.m., which are the City of East Palo Alto's construction hours limits per Municipal Code Section 15.04.125.

The modeling used a 5-year meteorological data set (2006-2010) from the Palo Alto Airport prepared for use with the AERMOD model by CARB. Annual DPM and $PM_{2.5}$ concentrations from construction activities at the project site during the January 2020 to January 2021 period were calculated using the model. DPM and $PM_{2.5}$ concentrations were calculated at nearby sensitive receptor locations. A receptor height of 1.5 meters (4.9 feet) was used to represent the breathing height of residences in nearby single-family homes.

The maximum-modeled annual DPM and $PM_{2.5}$ concentrations, which includes both the DPM and fugitive $PM_{2.5}$ concentrations, were identified at nearby sensitive receptors (as shown in Figure 1) to find the maximally exposed individuals (MEIs). The maximum increased cancer

[9] Bay Area Air Quality Management District (BAAQMD), 2012, *Recommended Methods for Screening and Modeling Local Risks and Hazards, Version 3.0.* May.

risks were calculated using BAAQMD recommended methods and exposure parameters described in *Attachment 1*. Non-cancer health hazards and maximum $PM_{2.5}$ concentrations were also calculated and identified. *Attachment 3* to this report includes the emission calculations used for the construction area source modeling and the cancer risk calculations.

Construction Community Risk Results

Results of this assessment indicated that the residential construction MEIs were located at single-family homes south of the project site across Weeks Street as seen in Figure 1. At these locations, the maximum excess residential cancer risks would exceed the BAAQMD significance threshold of 10 in one million and the maximum $PM_{2.5}$ concentrations would exceed the BAAQMD significance threshold of 0.3 $\mu g/m^3$. Table 2 summarizes the maximum cancer risks, $PM_{2.5}$ concentrations, and health hazard indexes for project related construction activities affecting the residential MEI. *Mitigation Measures AQ-1 and AQ-2 would reduce these impacts to a level of less-than-significant.*

Figure 1. Project Construction Site and Locations of Off-Site Sensitive Receptors and TAC Impacts

Table 2. Construction Risk Impacts at the Offsite MEI

Source	Cancer Risk (per million)	Annual $PM_{2.5}$ ($\mu g/m^3$)	Hazard Index
Project Construction			
Unmitigated	**73.8 (infant)**	**0.51**	0.08
Mitigated	6.3 (infant)	0.09	0.01
BAAQMD Single-Source Threshold	***>10.0***	***>0.3***	***>1.0***
Significant?			
Unmitigated	***Yes***	***Yes***	*No*
Mitigated	*No*	*No*	*No*

Cumulative Impact on Construction MEI

Community health risk assessments typically look at all substantial sources of TACs located within 1,000 feet of project sites. These sources include highways, busy surface streets, and stationary sources identified by BAAQMD. A review of BAAQMD's stationary source Google Earth map tool identified two sources within the 1,000-foot influence area. Traffic on nearby streets all have average daily traffic that is less than 10,000 vehicles per day based on existing plus project traffic volumes provided by the traffic consultant. Therefore, no roadways were included in the cumulative analysis. Figure 2 shows the sources affecting the project site. Details of the modeling and community risk calculations are included in *Attachment 4.*

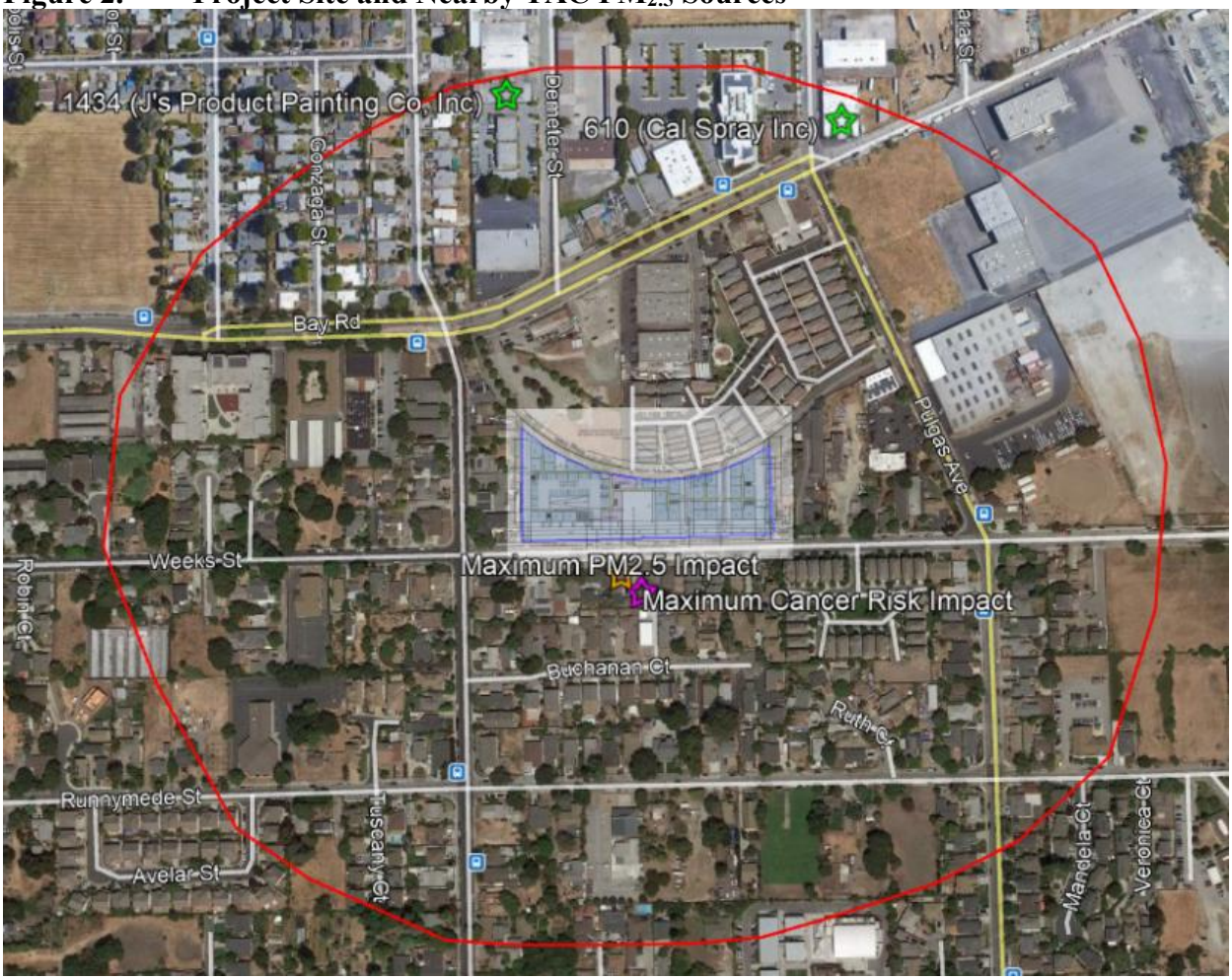
Stationary Sources

Permitted stationary sources of air pollution near the project site were identified using BAAQMD's *Stationary Source Risk & Hazard Analysis Tool*. This mapping tool uses Google Earth and identifies the location of nearby stationary sources and their estimated risk and hazard impacts. In addition, *BAAQMD's Permitted Stationary Sources 2017* GIS website[10] was used to locate updated nearby permitted stationary sources. A Stationary Source Information Form (SSIF) containing the identified sources was prepared and submitted to BAAQMD. BAAQMD provided updated emissions data.[11] Those data were input into BAAQMD's *Risk and Hazards Emissions Screening Calculator* which computes the cancer risk, annual $PM_{2.5}$ concentrations, and HI using adjustments to account for new OEHHA guidance and distance from the sources.

The District noted that J's Product Painting Co, Inc (Plant #1434) had been shut down. Therefore, it was not included within the cumulative analysis. The remaining stationary source was identified as Cal Spray Inc (Plant #610), which is a spray booth. Risk impacts from this source upon the construction MEI were calculated used the screening tool provided by BAAQMD and are listed in Table 3.

[10] BAAQMD, https://baaqmd.maps.arcgis.com/apps/webappviewer/index.html?id=2387ae674013413f987b1071715daa65
[11] Correspondence with Areana Flores, BAAQMD, August 8, 2019.

Figure 2. Project Site and Nearby TAC $PM_{2.5}$ Sources



Cumulative Health Risk Impact at Construction MEI

Table 3 reports both the project and cumulative community risk impacts at the sensitive receptor most affected by construction (i.e. the construction MEI). Without mitigation, the project would have a *significant* impact with respect to community risk caused by project construction activities, since the maximum increased cancer risk and maximum annual $PM_{2.5}$ concentration do exceed their single-source thresholds. However, as seen in Table 3, *Mitigation Measures AQ-1 and AQ-2 would reduce these impacts to less-than-significant*. The cumulative annual cancer risk, $PM_{2.5}$ concentration, and Hazard risk values, which includes unmitigated and mitigated, would not exceed the cumulative threshold. Therefore, the project would also have a *less-than-significant* impact regarding the cumulative risk within the area.

Table 3. Impacts from Combined Sources at Construction MEI

Source	Cancer Risk (per million)	Annual $PM_{2.5}$ ($\mu g/m^3$)	Hazard Index
Project Construction			
Unmitigated	**73.8 (infant)**	**0.51**	0.08
Mitigated	6.3 (infant)	0.09	0.01
Cal Spray Inc, Plant #610 - 300 meters (984 feet) from MEI	0.2	<0.01	<0.01
Combined Sources			
Unmitigated	74.0 (infant)	0.52	0.09
Mitigated	6.5 (infant)	0.10	0.02
BAAQMD Cumulative Source Threshold	***>100***	***>0.8***	***>10.0***
Significant?			
Unmitigated	*No*	*No*	*No*
Mitigated	*No*	*No*	*No*

Mitigation Measure AQ-1: **Include measures to control dust and exhaust during construction.**

During any construction period ground disturbance, the applicant shall ensure that the project contractor implement measures to control dust and exhaust. Implementation of the measures recommended by BAAQMD and listed below would reduce the air quality impacts associated with grading and new construction to a less-than-significant level. Additional measures are identified to reduce construction equipment exhaust emissions. The contractor shall implement the following best management practices that are required of all projects:

1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.

2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered.

3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.

4. All vehicle speeds on unpaved roads shall be limited to 15 miles per hour (mph).

5. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.

6. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.

7. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.

8. Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.

Effectiveness of Mitigation Measure AQ-1

The measures above are consistent with BAAQMD-recommended basic control measures for reducing fugitive particulate matter that are contained in the BAAQMD CEQA Air Quality Guidelines.

Mitigation Measure AQ-2: **Selection of equipment during construction to minimize emissions. Such equipment selection would include the following:**

The project shall develop a plan demonstrating that the off-road equipment used onsite to construct the project would achieve a fleet-wide average 88-percent reduction in DPM exhaust emissions or greater. One feasible plan to achieve this reduction would include the following:

1. All diesel-powered off-road equipment, larger than 25 horsepower, operating on the site for more than two days continuously shall meet U.S. EPA Tier 4 particulate matter emissions standards. Alternatively, the following types of equipment would also meet this requirement: Tier 3 engines that include CARB-certified Level 3 Diesel Particulate Filters[12] (or equivalent), or the use of equipment that is electrically powered or uses non-diesel fuels.

2. Cranes used during construction shall be electrified and temporary line power shall be available to minimize use of portable diesel-powered equipment.

Effectiveness of Mitigation Measure AQ-2

Project construction activities were analyzed with the assumption of Tier 3 equipment with CARB certified Level 3 diesel particulate filters, electrical cranes and the use of temporary power line. With implementation of this mitigation, the computed maximum increased lifetime residential cancer risk from construction, assuming infant exposure, would be 6.3 in one million or less, the maximum annual $PM_{2.5}$ concentration would be 0.09 $\mu g/m^3$, and the Hazard Index would be 0.01. As a result, impacts would be reduced to *less-than-significant* with respect to community risk caused by construction activities.

[12] See http://www.arb.ca.gov/diesel/verdev/vt/cvt.htm

Operational Community Health Risk Impacts – New Project Residences

Additionally, a screening health risk assessment was completed to analyze the impact existing TAC sources would have on the new proposed sensitive receptors that that project would introduce. The same TAC sources identified above were used in this HRA assessment.[13]

Roadway Sources

There are no roadways that carry substantial traffic volumes (i.e., greater than 10,000 vehicles per day) within 1,000 feet of the project site.

Stationary Sources

The project's sensitive receptors would be 250 meters (820 feet) south of the Cal Spray Inc stationary source. Results of the BAAQMD screening are listed in Table 4.

Combined Community Health Risk at Project Site

Community risk impacts from combined sources upon the project site sensitive receptors are reported in Table 5. As shown, the annual cancer risks, annual $PM_{2.5}$ concentrations, and Hazard Indexes from Plant #610 are below their respective BAAQMD single-source and cumulative significance thresholds. This stationary source would not exceed the single-source or cumulative source thresholds. Therefore, the new sensitive receptors introduced by the project would not be exposed to any significant existing TAC sources.

Table 4. Community Risk Impact to New Project Residences

Source	Cancer Risk (per million)	Annual $PM_{2.5}$ ($\mu g/m^3$)	Hazard Index
Cal Spray Inc, Plant #610 - 250 meters (820 feet) from MEI	0.3	<0.01	<0.01
BAAQMD Single-Source Threshold	***>10.0***	***>0.3***	***>0.1***
BAAQMD Cumulative Source Threshold	***>100***	***>0.8***	***>10.0***
Exceed Threshold? *Single/Cumulative Thresholds*	*No/No*	*No/No*	*No/No*

[13] We note that to the extent this analysis considers *existing* air quality issues in relation to the impact on *future residents* of the Project, it does so for informational purposes only pursuant to the judicial decisions in *CBIA v. BAAQMD* (2015) 62 Cal.4th 369, 386 and *Ballona Wetlands Land Trust v. City of Los Angeles* (2011) 201 Cal.App.4th 455, 473, which confirm that the impacts of the environment on a project are excluded from CEQA unless the project itself "exacerbates" such impacts.

Supporting Documentation

Attachment 1 is the methodology used to compute community risk impacts, including the methods to compute lifetime cancer risk from exposure to project emissions.

Attachment 2 includes the CalEEMod output.

Attachment 3 is the construction health risk assessment. AERMOD dispersion modeling files for this assessment, which are quite voluminous, are available upon request and would be provided in digital format

Attachment 4 includes the screening community risk calculations from existing TAC sources.

Attachment 1: Health Risk Calculation Methodology

A health risk assessment (HRA) for exposure to Toxic Air Contaminates (TACs) requires the application of a risk characterization model to the results from the air dispersion model to estimate potential health risk at each sensitive receptor location. The State of California Office of Environmental Health Hazard Assessment (OEHHA) and California Air Resources Board (CARB) develop recommended methods for conducting health risk assessments. The most recent OEHHA risk assessment guidelines were published in February of 2015.[14] These guidelines incorporate substantial changes designed to provide for enhanced protection of children, as required by State law, compared to previous published risk assessment guidelines. CARB has provided additional guidance on implementing OEHHA's recommended methods.[15] This HRA used the 2015 OEHHA risk assessment guidelines and CARB guidance. The BAAQMD has adopted recommended procedures for applying the newest OEHHA guidelines as part of Regulation 2, Rule 5: New Source Review of Toxic Air Contaminants.[16] Exposure parameters from the OEHHA guidelines and the recent BAAQMD HRA Guidelines were used in this evaluation.

Cancer Risk

Potential increased cancer risk from inhalation of TACs are calculated based on the TAC concentration over the period of exposure, inhalation dose, the TAC cancer potency factor, and an age sensitivity factor to reflect the greater sensitivity of infants and children to cancer causing TACs. The inhalation dose depends on a person's breathing rate, exposure time and frequency and duration of exposure. These parameters vary depending on the age, or age range, of the persons being exposed and whether the exposure is considered to occur at a residential location or other sensitive receptor location.

The current OEHHA guidance recommends that cancer risk be calculated by age groups to account for different breathing rates and sensitivity to TACs. Specifically, they recommend evaluating risks for the third trimester of pregnancy to age zero, ages zero to less than two (infant exposure), ages two to less than 16 (child exposure), and ages 16 to 70 (adult exposure). Age sensitivity factors (ASFs) associated with the different types of exposure are an ASF of 10 for the third trimester and infant exposures, an ASF of 3 for a child exposure, and an ASF of 1 for an adult exposure. Also associated with each exposure type are different breathing rates, expressed as liters per kilogram of body weight per day (L/kg-day). As recommended by the BAAQMD for residential exposures, 95th percentile breathing rates are used for the third trimester and infant exposures, and 80th percentile breathing rates for child and adult exposures. For children at schools and daycare facilities, BAAQMD recommends using the 95th percentile breathing rates. Additionally, CARB and the BAAQMD recommend the use of a residential exposure duration of

[14] OEHHA, 2015. *Air Toxics Hot Spots Program Risk Assessment Guidelines, The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments*. Office of Environmental Health Hazard Assessment. February.
[15] CARB, 2015. *Risk Management Guidance for Stationary Sources of Air Toxics*. July 23.
[16] BAAQMD, 2016. *BAAQMD Air Toxics NSR Program Health Risk Assessment (HRA) Guidelines*. December 2016.

30 years for sources with long-term emissions (e.g., roadways). For workers, assumed to be adults, a 25-year exposure period is recommended by the BAAQMD.

Under previous OEHHA and BAAQMD HRA guidance, residential receptors are assumed to be at their home 24 hours a day, or 100 percent of the time. In the 2015 Risk Assessment Guidance, OEHHA includes adjustments to exposure duration to account for the fraction of time at home (FAH), which can be less than 100 percent of the time, based on updated population and activity statistics. The FAH factors are age-specific and are: 0.85 for third trimester of pregnancy to less than 2 years old, 0.72 for ages 2 to less than 16 years, and 0.73 for ages 16 to 70 years. Use of the FAH factors is allowed by the BAAQMD if there are no schools in the project vicinity that would have a cancer risk of one in a million or greater assuming 100 percent exposure (FAH = 1.0).

Functionally, cancer risk is calculated using the following parameters and formulas:

Cancer Risk (per million) = $CPF \times Inhalation\ Dose \times ASF \times ED/AT \times FAH \times 10^6$

Where:

CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = $C_{air} \times DBR \times A \times (EF/365) \times 10^{-6}$

Where:

C_{air} = concentration in air ($\mu g/m^3$)
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

The health risk parameters used in this evaluation are summarized as follows:

Parameter	***Exposure Type →***	**Infant**		**Child**		**Adult**
	Age Range →	**3rd Trimester**	**0<2**	**2 < 9**	**2 < 16**	**16 - 30**
DPM Cancer Potency Factor $(mg/kg\text{-}day)^{-1}$		1.10E+00	1.10E+00	1.10E+00	1.10E+00	1.10E+00
Daily Breathing Rate (L/kg-day) 80th Percentile Rate		273	758	631	572	261
Daily Breathing Rate (L/kg-day) 95th Percentile Rate		361	1,090	861	745	335
Inhalation Absorption Factor		1	1	1	1	1
Averaging Time (years)		70	70	70	70	70
Exposure Duration (years)		0.25	2	14	14	14
Exposure Frequency (days/year)		350	350	350	350	350
Age Sensitivity Factor		10	10	3	3	1
Fraction of Time at Home		0.85-1.0	0.85-1.0	0.72-1.0	0.72-1.0	0.73

Non-Cancer Hazards

Potential non-cancer health hazards from TAC exposure are expressed in terms of a hazard index (HI), which is the ratio of the TAC concentration to a reference exposure level (REL). OEHHA has defined acceptable concentration levels for contaminants that pose non-cancer health hazards. TAC concentrations below the REL are not expected to cause adverse health impacts, even for sensitive individuals. The total HI is calculated as the sum of the HIs for each TAC evaluated and the total HI is compared to the BAAQMD significance thresholds to determine whether a significant non-cancer health impact from a project would occur.

Typically, for residential projects located near roadways with substantial TAC emissions, the primary TAC of concern with non-cancer health effects is diesel particulate matter (DPM). For DPM, the chronic inhalation REL is 5 micrograms per cubic meter ($\mu g/m^3$).

Annual $PM_{2.5}$ Concentrations

While not a TAC, fine particulate matter ($PM_{2.5}$) has been identified by the BAAQMD as a pollutant with potential non-cancer health effects that should be included when evaluating potential community health impacts under the California Environmental Quality Act (CEQA). The thresholds of significance for $PM_{2.5}$ (project level and cumulative) are in terms of an increase in the annual average concentration. When considering $PM_{2.5}$ impacts, the contribution from all sources of $PM_{2.5}$ emissions should be included. For projects with potential impacts from nearby local roadways, the $PM_{2.5}$ impacts should include those from vehicle exhaust emissions, $PM_{2.5}$ generated from vehicle tire and brake wear, and fugitive emissions from re-suspended dust on the roads.

Attachment 2: CalEEMod Modeling Output

965 Weeks Apartments - Bay Area AQMD Air District, Annual

965 Weeks Apartments

Bay Area AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Enclosed Parking with Elevator	76.95	1000sqft	0.46	76,950.00	0
Other Non-Asphalt Surfaces	29.84	1000sqft	0.69	29,839.00	0
Apartments Mid Rise	136.00	Dwelling Unit	1.40	126,000.00	389

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	64
Climate Zone	5			**Operational Year**	2022
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	290	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Adjusted CO2 intensity factor

Land Use - garage 20,000 sf footprint. Apartment sf and population from Mid-Peninsula Housing project description. Acreages estimated from plans.

Construction Phase - Adjusted - no demo

Vehicle Trips - TIA Trip generation

Energy Use -

Land Use Change -

Sequestration -

Construction Off-road Equipment Mitigation - BAAQMD BMPs for dust control, tier 3 w/level 3 DPFs

Mobile Land Use Mitigation -

Mobile Commute Mitigation -

Area Mitigation - Use low VOC paints interior and exterior

Energy Mitigation - Anticipated savings of compliance with 2019 Title 24 building efficiency standards for mid-rise multifamily, and use of EnergyStar Appliances

Water Mitigation - Installation of low flow fixtures and compliance with State MWELO

Trips and VMT - Local traffic only for HRA

Table Name	Column Name	Default Value	New Value
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	FuelType	Diesel	Electrical
tblConstEquipMitigation	FuelType	Diesel	Electrical
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblLandUse	LandUseSquareFeet	29,840.00	29,839.00
tblLandUse	LandUseSquareFeet	136,000.00	126,000.00
tblLandUse	LotAcreage	1.77	0.46
tblLandUse	LotAcreage	3.58	1.40
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblSequestration	NumberOfNewTrees	0.00	100.00
tblTripsAndVMT	HaulingTripLength	20.00	1.00
tblTripsAndVMT	HaulingTripLength	20.00	1.00
tblTripsAndVMT	HaulingTripLength	20.00	1.00
tblTripsAndVMT	HaulingTripLength	20.00	1.00
tblTripsAndVMT	HaulingTripLength	20.00	1.00
tblTripsAndVMT	VendorTripLength	7.30	1.00
tblTripsAndVMT	VendorTripLength	7.30	1.00

tblTripsAndVMT	VendorTripLength	7.30	1.00
tblTripsAndVMT	VendorTripLength	7.30	1.00
tblTripsAndVMT	VendorTripLength	7.30	1.00
tblTripsAndVMT	WorkerTripLength	10.80	1.00
tblTripsAndVMT	WorkerTripLength	10.80	1.00
tblTripsAndVMT	WorkerTripLength	10.80	1.00
tblTripsAndVMT	WorkerTripLength	10.80	1.00
tblTripsAndVMT	WorkerTripLength	10.80	1.00
tblVehicleTrips	WD_TR	6.65	5.44

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2020	0.5631	2.3215	1.9148	3.3800e-003	0.0371	0.1124	0.1495	0.0145	0.1075	0.1220	0.0000	286.5491	286.5491	0.0554	0.0000	287.9339
2021	0.6373	5.3900e-003	6.9700e-003	1.0000e-005	8.0000e-005	3.3000e-004	4.1000e-004	2.0000e-005	3.3000e-004	3.5000e-004	0.0000	0.9745	0.9745	6.0000e-005	0.0000	0.9762
Maximum	**0.6373**	**2.3215**	**1.9148**	**3.3800e-003**	**0.0371**	**0.1124**	**0.1495**	**0.0145**	**0.1075**	**0.1220**	**0.0000**	**286.5491**	**286.5491**	**0.0554**	**0.0000**	**287.9339**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e

Year	tons/yr										MT/yr					
2020	0.3501	1.2106	1.2029	3.3800e-003	0.0236	9.6000e-003	0.0332	6.1200e-003	9.5700e-003	0.0157	0.0000	168.6144	168.6144	0.0339	0.0000	169.4607
2021	0.6368	4.8000e-003	7.0200e-003	1.0000e-005	8.0000e-005	5.0000e-005	1.3000e-004	2.0000e-005	5.0000e-005	7.0000e-005	0.0000	0.9745	0.9745	6.0000e-005	0.0000	0.9762
Maximum	**0.6368**	**1.2106**	**1.2029**	**3.3800e-003**	**0.0236**	**9.6000e-003**	**0.0332**	**6.1200e-003**	**9.5700e-003**	**0.0157**	**0.0000**	**168.6144**	**168.6144**	**0.0339**	**0.0000**	**169.4607**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**17.79**	**47.77**	**37.04**	**0.00**	**36.20**	**91.44**	**77.76**	**57.60**	**91.08**	**87.11**	**0.00**	**41.02**	**41.02**	**38.83**	**0.00**	**41.01**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**1-1-2020**	**3-31-2020**	0.5024	0.2442
2	**4-1-2020**	**6-30-2020**	0.7230	0.3524
3	**7-1-2020**	**9-30-2020**	0.7309	0.3562
4	**10-1-2020**	**12-31-2020**	0.8550	0.5317
5	**1-1-2021**	**3-31-2021**	0.7214	0.7201
		Highest	0.8550	0.7201

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.9343	0.0189	1.4440	9.1000e-004		0.0674	0.0674		0.0674	0.0674	6.2002	4.1982	10.3984	0.0116	4.1000e-004	10.8085
Energy	6.4000e-003	0.0547	0.0233	3.5000e-004		4.4200e-003	4.4200e-003		4.4200e-003	4.4200e-003	0.0000	198.2067	198.2067	0.0147	3.9500e-003	199.7517
Mobile	0.1902	0.9359	2.1344	7.6200e-003	0.6588	6.9100e-003	0.6657	0.1768	6.4700e-003	0.1833	0.0000	699.7070	699.7070	0.0258	0.0000	700.3527
Waste						0.0000	0.0000		0.0000	0.0000	12.6991	0.0000	12.6991	0.7505	0.0000	31.4615

Water						0.0000	0.0000		0.0000	0.0000	2.8112	8.8789	11.6900	0.2896	7.0000e-003	21.0170
Total	**1.1310**	**1.0095**	**3.6017**	**8.8800e-003**	**0.6588**	**0.0787**	**0.7375**	**0.1768**	**0.0783**	**0.2551**	**21.7105**	**910.9907**	**932.7012**	**1.0922**	**0.0114**	**963.3915**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.6205	0.0117	1.0119	5.0000e-005		5.5900e-003	5.5900e-003		5.5900e-003	5.5900e-003	0.0000	1.6514	1.6514	1.6000e-003	0.0000	1.6913
Energy	5.0600e-003	0.0432	0.0184	2.8000e-004		3.4900e-003	3.4900e-003		3.4900e-003	3.4900e-003	0.0000	170.5715	170.5715	0.0130	3.4100e-003	171.9133
Mobile	0.1671	0.7672	1.6046	5.2100e-003	0.4339	4.8400e-003	0.4387	0.1165	4.5300e-003	0.1210	0.0000	478.6129	478.6129	0.0197	0.0000	479.1046
Waste						0.0000	0.0000		0.0000	0.0000	12.6991	0.0000	12.6991	0.7505	0.0000	31.4615
Water						0.0000	0.0000		0.0000	0.0000	2.2489	7.4606	9.7095	0.2317	5.6100e-003	17.1742
Total	**0.7927**	**0.8221**	**2.6349**	**5.5400e-003**	**0.4339**	**0.0139**	**0.4478**	**0.1165**	**0.0136**	**0.1301**	**14.9481**	**658.2965**	**673.2445**	**1.0165**	**9.0200e-003**	**701.3450**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**29.91**	**18.57**	**26.84**	**37.61**	**34.14**	**82.31**	**39.29**	**34.14**	**82.61**	**49.01**	**31.15**	**27.74**	**27.82**	**6.93**	**20.60**	**27.20**

2.3 Vegetation

Vegetation

	CO2e
Category	MT

New Trees	70.8000
Vegetation Land Change	-10.8612
Total	**59.9388**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/29/2020	1/31/2020	5	3	
2	Grading	Grading	2/1/2020	2/10/2020	5	6	
3	Building Construction	Building Construction	2/11/2020	12/14/2020	5	220	
4	Paving	Paving	12/15/2020	12/28/2020	5	10	
5	Architectural Coating	Architectural Coating	12/29/2020	1/11/2021	5	10	

Acres of Grading (Site Preparation Phase): 4.5

Acres of Grading (Grading Phase): 3

Acres of Paving: 1.15

Residential Indoor: 255,150; Residential Outdoor: 85,050; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area:

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Graders	1	8.00	187	0.41
Site Preparation	Scrapers	1	8.00	367	0.48
Site Preparation	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Building Construction	Cranes	1	8.00	231	0.29
Building Construction	Forklifts	2	7.00	89	0.20

Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Building Construction	Welders	3	8.00	46	0.45
Paving	Cement and Mortar Mixers	1	8.00	9	0.56
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	1	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	3	8.00	0.00	0.00	1.00	1.00	1.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	0.00	1.00	1.00	1.00	LD_Mix	HDT_Mix	HHDT
Building Construction	8	143.00	32.00	0.00	1.00	1.00	1.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	1.00	1.00	1.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	29.00	0.00	0.00	1.00	1.00	1.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Alternative Fuel for Construction Equipment

Use Cleaner Engines for Construction Equipment

Use DPF for Construction Equipment

Use Soil Stabilizer

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.3900e-003	0.0000	2.3900e-003	2.6000e-004	0.0000	2.6000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.4800e-003	0.0299	0.0169	4.0000e-005		1.1700e-003	1.1700e-003		1.0700e-003	1.0700e-003	0.0000	3.2290	3.2290	1.0400e-003	0.0000	3.2551
Total	**2.4800e-003**	**0.0299**	**0.0169**	**4.0000e-005**	**2.3900e-003**	**1.1700e-003**	**3.5600e-003**	**2.6000e-004**	**1.0700e-003**	**1.3300e-003**	**0.0000**	**3.2290**	**3.2290**	**1.0400e-003**	**0.0000**	**3.2551**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-005	1.0000e-005	8.0000e-005	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	9.9000e-003	9.9000e-003	0.0000	0.0000	9.9200e-003
Total	**1.0000e-005**	**1.0000e-005**	**8.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**9.9000e-003**	**9.9000e-003**	**0.0000**	**0.0000**	**9.9200e-003**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Fugitive Dust					9.3000e-004	0.0000	9.3000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.0000e-004	0.0178	0.0205	4.0000e-005		1.1000e-004	1.1000e-004		1.1000e-004	1.1000e-004	0.0000	3.2290	3.2290	1.0400e-003	0.0000	3.2551
Total	**9.0000e-004**	**0.0178**	**0.0205**	**4.0000e-005**	**9.3000e-004**	**1.1000e-004**	**1.0400e-003**	**5.0000e-005**	**1.1000e-004**	**1.6000e-004**	**0.0000**	**3.2290**	**3.2290**	**1.0400e-003**	**0.0000**	**3.2551**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-005	1.0000e-005	8.0000e-005	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	9.9000e-003	9.9000e-003	0.0000	0.0000	9.9200e-003
Total	**1.0000e-005**	**1.0000e-005**	**8.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**9.9000e-003**	**9.9000e-003**	**0.0000**	**0.0000**	**9.9200e-003**

3.3 Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0197	0.0000	0.0197	0.0101	0.0000	0.0101	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.7700e-003	0.0640	0.0298	6.0000e-005		2.9700e-003	2.9700e-003		2.7300e-003	2.7300e-003	0.0000	5.4333	5.4333	1.7600e-003	0.0000	5.4773
Total	**5.7700e-003**	**0.0640**	**0.0298**	**6.0000e-005**	**0.0197**	**2.9700e-003**	**0.0226**	**0.0101**	**2.7300e-003**	**0.0128**	**0.0000**	**5.4333**	**5.4333**	**1.7600e-003**	**0.0000**	**5.4773**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-005	2.0000e-005	2.0000e-004	0.0000	2.0000e-005	0.0000	2.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0248	0.0248	0.0000	0.0000	0.0248
Total	**3.0000e-005**	**2.0000e-005**	**2.0000e-004**	**0.0000**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0248**	**0.0248**	**0.0000**	**0.0000**	**0.0248**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					7.6700e-003	0.0000	7.6700e-003	1.9700e-003	0.0000	1.9700e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.5100e-003	0.0307	0.0364	6.0000e-005		2.2000e-004	2.2000e-004		2.2000e-004	2.2000e-004	0.0000	5.4333	5.4333	1.7600e-003	0.0000	5.4773
Total	**1.5100e-003**	**0.0307**	**0.0364**	**6.0000e-005**	**7.6700e-003**	**2.2000e-004**	**7.8900e-003**	**1.9700e-003**	**2.2000e-004**	**2.1900e-003**	**0.0000**	**5.4333**	**5.4333**	**1.7600e-003**	**0.0000**	**5.4773**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-005	2.0000e-005	2.0000e-004	0.0000	2.0000e-005	0.0000	2.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0248	0.0248	0.0000	0.0000	0.0248
Total	**3.0000e-005**	**2.0000e-005**	**2.0000e-004**	**0.0000**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0248**	**0.0248**	**0.0000**	**0.0000**	**0.0248**

3.4 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2517	1.9177	1.6387	2.7500e-003		0.1043	0.1043		0.1000	0.1000	0.0000	228.4088	228.4088	0.0464	0.0000	229.5678
Total	**0.2517**	**1.9177**	**1.6387**	**2.7500e-003**		**0.1043**	**0.1043**		**0.1000**	**0.1000**	**0.0000**	**228.4088**	**228.4088**	**0.0464**	**0.0000**	**229.5678**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Vendor	6.4300e-003	0.2412	0.0614	2.9000e-004	3.2400e-003	3.8000e-004	3.6300e-003	9.5000e-004	3.7000e-004	1.3100e-003	0.0000	28.2267	28.2267	3.1700e-003	0.0000	28.3061
Worker	0.0177	8.1000e-003	0.1052	1.4000e-004	0.0117	1.6000e-004	0.0118	3.1200e-003	1.5000e-004	3.2700e-003	0.0000	12.9829	12.9829	5.6000e-004	0.0000	12.9970
Total	**0.0241**	**0.2493**	**0.1665**	**4.3000e-004**	**0.0149**	**5.4000e-004**	**0.0154**	**4.0700e-003**	**5.2000e-004**	**4.5800e-003**	**0.0000**	**41.2096**	**41.2096**	**3.7300e-003**	**0.0000**	**41.3031**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0485	0.8665	0.9108	2.7500e-003		8.3000e-003	8.3000e-003		8.3000e-003	8.3000e-003	0.0000	110.4741	110.4741	0.0248	0.0000	111.0946
Total	**0.0485**	**0.8665**	**0.9108**	**2.7500e-003**		**8.3000e-003**	**8.3000e-003**		**8.3000e-003**	**8.3000e-003**	**0.0000**	**110.4741**	**110.4741**	**0.0248**	**0.0000**	**111.0946**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.4300e-003	0.2412	0.0614	2.9000e-004	3.2400e-003	3.8000e-004	3.6300e-003	9.5000e-004	3.7000e-004	1.3100e-003	0.0000	28.2267	28.2267	3.1700e-003	0.0000	28.3061
Worker	0.0177	8.1000e-003	0.1052	1.4000e-004	0.0117	1.6000e-004	0.0118	3.1200e-003	1.5000e-004	3.2700e-003	0.0000	12.9829	12.9829	5.6000e-004	0.0000	12.9970
Total	**0.0241**	**0.2493**	**0.1665**	**4.3000e-004**	**0.0149**	**5.4000e-004**	**0.0154**	**4.0700e-003**	**5.2000e-004**	**4.5800e-003**	**0.0000**	**41.2096**	**41.2096**	**3.7300e-003**	**0.0000**	**41.3031**

3.5 Paving - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	5.7700e-003	0.0579	0.0590	9.0000e-005		3.2800e-003	3.2800e-003		3.0300e-003	3.0300e-003	0.0000	7.7529	7.7529	2.4600e-003	0.0000	7.8143
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**5.7700e-003**	**0.0579**	**0.0590**	**9.0000e-005**		**3.2800e-003**	**3.2800e-003**		**3.0300e-003**	**3.0300e-003**	**0.0000**	**7.7529**	**7.7529**	**2.4600e-003**	**0.0000**	**7.8143**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.0000e-005	4.0000e-005	5.0000e-004	0.0000	6.0000e-005	0.0000	6.0000e-005	1.0000e-005	0.0000	2.0000e-005	0.0000	0.0619	0.0619	0.0000	0.0000	0.0620
Total	**8.0000e-005**	**4.0000e-005**	**5.0000e-004**	**0.0000**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**1.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0619**	**0.0619**	**0.0000**	**0.0000**	**0.0620**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.1000e-003	0.0443	0.0649	9.0000e-005		4.0000e-004	4.0000e-004		4.0000e-004	4.0000e-004	0.0000	7.7529	7.7529	2.4600e-003	0.0000	7.8143
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**2.1000e-003**	**0.0443**	**0.0649**	**9.0000e-005**		**4.0000e-004**	**4.0000e-004**		**4.0000e-004**	**4.0000e-004**	**0.0000**	**7.7529**	**7.7529**	**2.4600e-003**	**0.0000**	**7.8143**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.0000e-005	4.0000e-005	5.0000e-004	0.0000	6.0000e-005	0.0000	6.0000e-005	1.0000e-005	0.0000	2.0000e-005	0.0000	0.0619	0.0619	0.0000	0.0000	0.0620
Total	**8.0000e-005**	**4.0000e-005**	**5.0000e-004**	**0.0000**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**1.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0619**	**0.0619**	**0.0000**	**0.0000**	**0.0620**

3.6 Architectural Coating - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.2728					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Off-Road	3.6000e-004	2.5300e-003	2.7500e-003	0.0000		1.7000e-004	1.7000e-004		1.7000e-004	1.7000e-004	0.0000	0.3830	0.3830	3.0000e-005	0.0000	0.3837
Total	**0.2731**	**2.5300e-003**	**2.7500e-003**	**0.0000**		**1.7000e-004**	**1.7000e-004**		**1.7000e-004**	**1.7000e-004**	**0.0000**	**0.3830**	**0.3830**	**3.0000e-005**	**0.0000**	**0.3837**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.0000e-005	2.0000e-005	2.9000e-004	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0359	0.0359	0.0000	0.0000	0.0359
Total	**5.0000e-005**	**2.0000e-005**	**2.9000e-004**	**0.0000**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0359**	**0.0359**	**0.0000**	**0.0000**	**0.0359**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.2728					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.0000e-005	2.0400e-003	2.7500e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.3830	0.3830	3.0000e-005	0.0000	0.3837
Total	**0.2729**	**2.0400e-003**	**2.7500e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.3830**	**0.3830**	**3.0000e-005**	**0.0000**	**0.3837**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.0000e-005	2.0000e-005	2.9000e-004	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0359	0.0359	0.0000	0.0000	0.0359
Total	**5.0000e-005**	**2.0000e-005**	**2.9000e-004**	**0.0000**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0359**	**0.0359**	**0.0000**	**0.0000**	**0.0359**

3.6 Architectural Coating - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.6365					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.7000e-004	5.3400e-003	6.3600e-003	1.0000e-005		3.3000e-004	3.3000e-004		3.3000e-004	3.3000e-004	0.0000	0.8936	0.8936	6.0000e-005	0.0000	0.8952
Total	**0.6372**	**5.3400e-003**	**6.3600e-003**	**1.0000e-005**		**3.3000e-004**	**3.3000e-004**		**3.3000e-004**	**3.3000e-004**	**0.0000**	**0.8936**	**0.8936**	**6.0000e-005**	**0.0000**	**0.8952**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-004	5.0000e-005	6.1000e-004	0.0000	8.0000e-005	0.0000	8.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0809	0.0809	0.0000	0.0000	0.0810
Total	**1.0000e-004**	**5.0000e-005**	**6.1000e-004**	**0.0000**	**8.0000e-005**	**0.0000**	**8.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0809**	**0.0809**	**0.0000**	**0.0000**	**0.0810**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.6365					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.1000e-004	4.7500e-003	6.4100e-003	1.0000e-005		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	0.8936	0.8936	6.0000e-005	0.0000	0.8952
Total	**0.6367**	**4.7500e-003**	**6.4100e-003**	**1.0000e-005**		**5.0000e-005**	**5.0000e-005**		**5.0000e-005**	**5.0000e-005**	**0.0000**	**0.8936**	**0.8936**	**6.0000e-005**	**0.0000**	**0.8952**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Worker	1.0000e-004	5.0000e-005	6.1000e-004	0.0000	8.0000e-005	0.0000	8.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0809	0.0809	0.0000	0.0000	0.0810
Total	**1.0000e-004**	**5.0000e-005**	**6.1000e-004**	**0.0000**	**8.0000e-005**	**0.0000**	**8.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0809**	**0.0809**	**0.0000**	**0.0000**	**0.0810**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Increase Density

Integrate Below Market Rate Housing

Improve Pedestrian Network

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.1671	0.7672	1.6046	5.2100e-003	0.4339	4.8400e-003	0.4387	0.1165	4.5300e-003	0.1210	0.0000	478.6129	478.6129	0.0197	0.0000	479.1046
Unmitigated	0.1902	0.9359	2.1344	7.6200e-003	0.6588	6.9100e-003	0.6657	0.1768	6.4700e-003	0.1833	0.0000	699.7070	699.7070	0.0258	0.0000	700.3527

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	739.84	869.04	796.96	1,770,215	1,165,793
Enclosed Parking with Elevator	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	739.84	869.04	796.96	1,770,215	1,165,793

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3
Enclosed Parking with Elevator	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.576985	0.039376	0.193723	0.112069	0.016317	0.005358	0.017943	0.025814	0.002614	0.002274	0.005874	0.000887	0.000768
Enclosed Parking with Elevator	0.576985	0.039376	0.193723	0.112069	0.016317	0.005358	0.017943	0.025814	0.002614	0.002274	0.005874	0.000887	0.000768
Other Non-Asphalt Surfaces	0.576985	0.039376	0.193723	0.112069	0.016317	0.005358	0.017943	0.025814	0.002614	0.002274	0.005874	0.000887	0.000768

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

Install Energy Efficient Appliances

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	120.5254	120.5254	0.0121	2.4900e-003	121.5698
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	134.8458	134.8458	0.0135	2.7900e-003	136.0143
NaturalGas Mitigated	5.0600e-003	0.0432	0.0184	2.8000e-004		3.4900e-003	3.4900e-003		3.4900e-003	3.4900e-003	0.0000	50.0461	50.0461	9.6000e-004	9.2000e-004	50.3435
NaturalGas Unmitigated	6.4000e-003	0.0547	0.0233	3.5000e-004		4.4200e-003	4.4200e-003		4.4200e-003	4.4200e-003	0.0000	63.3609	63.3609	1.2100e-003	1.1600e-003	63.7374

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	1.18734e+006	6.4000e-003	0.0547	0.0233	3.5000e-004		4.4200e-003	4.4200e-003		4.4200e-003	4.4200e-003	0.0000	63.3609	63.3609	1.2100e-003	1.1600e-003	63.7374
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**6.4000e-003**	**0.0547**	**0.0233**	**3.5000e-004**		**4.4200e-003**	**4.4200e-003**		**4.4200e-003**	**4.4200e-003**	**0.0000**	**63.3609**	**63.3609**	**1.2100e-003**	**1.1600e-003**	**63.7374**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	937829	5.0600e-003	0.0432	0.0184	2.8000e-004		3.4900e-003	3.4900e-003		3.4900e-003	3.4900e-003	0.0000	50.0461	50.0461	9.6000e-004	9.2000e-004	50.3435
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**5.0600e-003**	**0.0432**	**0.0184**	**2.8000e-004**		**3.4900e-003**	**3.4900e-003**		**3.4900e-003**	**3.4900e-003**	**0.0000**	**50.0461**	**50.0461**	**9.6000e-004**	**9.2000e-004**	**50.3435**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	574191	75.5301	7.5500e-003	1.5600e-003	76.1846
Enclosed Parking with Elevator	450927	59.3157	5.9300e-003	1.2300e-003	59.8298
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**134.8458**	**0.0135**	**2.7900e-003**	**136.0143**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	555818	73.1133	7.3100e-003	1.5100e-003	73.7469
Enclosed Parking with Elevator	360434	47.4121	4.7400e-003	9.8000e-004	47.8230
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**120.5254**	**0.0121**	**2.4900e-003**	**121.5698**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

No Hearths Installed

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.6205	0.0117	1.0119	5.0000e-005		5.5900e-003	5.5900e-003		5.5900e-003	5.5900e-003	0.0000	1.6514	1.6514	1.6000e-003	0.0000	1.6913
Unmitigated	0.9343	0.0189	1.4440	9.1000e-004		0.0674	0.0674		0.0674	0.0674	6.2002	4.1982	10.3984	0.0116	4.1000e-004	10.8085

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0909					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.4990					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.3138	7.2200e-003	0.4321	8.6000e-004		0.0618	0.0618		0.0618	0.0618	6.2002	2.5467	8.7469	9.9600e-003	4.1000e-004	9.1172
Landscaping	0.0306	0.0117	1.0119	5.0000e-005		5.5900e-003	5.5900e-003		5.5900e-003	5.5900e-003	0.0000	1.6514	1.6514	1.6000e-003	0.0000	1.6913
Total	**0.9343**	**0.0189**	**1.4440**	**9.1000e-004**		**0.0674**	**0.0674**		**0.0674**	**0.0674**	**6.2002**	**4.1982**	**10.3984**	**0.0116**	**4.1000e-004**	**10.8086**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0909					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.4990					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0306	0.0117	1.0119	5.0000e-005		5.5900e-003	5.5900e-003		5.5900e-003	5.5900e-003	0.0000	1.6514	1.6514	1.6000e-003	0.0000	1.6913
Total	**0.6205**	**0.0117**	**1.0119**	**5.0000e-005**		**5.5900e-003**	**5.5900e-003**		**5.5900e-003**	**5.5900e-003**	**0.0000**	**1.6514**	**1.6514**	**1.6000e-003**	**0.0000**	**1.6913**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	9.7095	0.2317	5.6100e-003	17.1742
Unmitigated	11.6900	0.2896	7.0000e-003	21.0170

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	8.86095 / 5.58625	11.6900	0.2896	7.0000e-003	21.0170
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**11.6900**	**0.2896**	**7.0000e-003**	**21.0170**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	7.08876 / 5.24549	9.7095	0.2317	5.6100e-003	17.1742
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**9.7095**	**0.2317**	**5.6100e-003**	**17.1742**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	12.6991	0.7505	0.0000	31.4615
Unmitigated	12.6991	0.7505	0.0000	31.4615

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	62.56	12.6991	0.7505	0.0000	31.4615
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**12.6991**	**0.7505**	**0.0000**	**31.4615**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	62.56	12.6991	0.7505	0.0000	31.4615
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**12.6991**	**0.7505**	**0.0000**	**31.4615**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

	Total CO2	CH4	N2O	CO2e

Category	MT			
Unmitigated	59.9388	0.0000	0.0000	59.9388

11.1 Vegetation Land Change

Vegetation Type

	Initial/Final	Total CO2	CH4	N2O	CO2e
	Acres	MT			
Grassland	2.52 / 0	-10.8612	0.0000	0.0000	-10.8612
Total		**-10.8612**	**0.0000**	**0.0000**	**-10.8612**

11.2 Net New Trees

Species Class

	Number of Trees	Total CO2	CH4	N2O	CO2e
		MT			
Miscellaneous	100	70.8000	0.0000	0.0000	70.8000
Total		**70.8000**	**0.0000**	**0.0000**	**70.8000**

Attachment 3: Construction Health Risk Calculations

965 Weeks Street, East Palo Alto, CA

DPM Emissions and Modeling Emission Rates - Without Mitigation

Construction Year	Activity	DPM (ton/year)	Area Source	DPM Emissions (lb/yr)	DPM Emissions (lb/hr)	DPM Emissions (g/s)	Modeled Area (m^2)	DPM Emission Rate ($g/s/m^2$)
2020-2021	Construction	0.1127	CON_DPM	225.5	0.05615	7.08E-03	10,657	6.64E-07

Construction Hours

hr/day =	11	(7am - 6pm)
days/yr =	365	
hours/year =	4015	

PM2.5 Fugitive Dust Emissions for Modeling - Without Mitigation

Construction Year	Activity	Area Source	PM2.5 Emissions (ton/year)	PM2.5 Emissions (lb/yr)	PM2.5 Emissions (lb/hr)	PM2.5 Emissions (g/s)	Modeled Area (m^2)	PM2.5 Emission Rate $g/s/m^2$
2020-2021	Construction	CON_FUG	0.01452	29.0	0.00723	9.11E-04	10,657	8.55E-08

Construction Hours

hr/day =	11	(7am - 6pm)
days/yr =	365	
hours/year =	4015	

DPM Construction Emissions and Modeling Emission Rates - With Mitigation

Construction Year	Activity	DPM (ton/year)	Area Source	DPM Emissions (lb/yr)	DPM Emissions (lb/hr)	DPM Emissions (g/s)	Modeled Area (m^2)	DPM Emission Rate ($g/s/m^2$)
2020-2021	Construction	0.0097	CON_DPM	19.3	0.00481	6.06E-04	10,657	5.68E-08

Construction Hours

hr/day =	11	(7am - 6pm)
days/yr =	365	
hours/year =	4015	

PM2.5 Fugitive Dust Construction Emissions for Modeling - With Mitigation

Construction Year	Activity	Area Source	PM2.5 Emissions (ton/year)	PM2.5 Emissions (lb/yr)	PM2.5 Emissions (lb/hr)	PM2.5 Emissions (g/s)	Modeled Area (m^2)	PM2.5 Emission Rate $g/s/m^2$
2020-2021	Construction	CON_FUG	0.00614	12.3	0.00306	3.85E-04	10,657	3.62E-08

Construction Hours

hr/day =	11	(7am - 6pm)
days/yr =	365	
hours/year =	4015	

965 Weeks Street, East Palo Alto - Construction Health Impact Summary

Maximum Impacts at MEI Location - Unmitigated

Emissions Year	Maximum Concentrations: Exhaust PM10/DPM ($\mu g/m^3$)	Maximum Concentrations: Fugitive PM2.5 ($\mu g/m^3$)	Cancer Risk (per million): Infant/Child	Cancer Risk (per million): Adult	Hazard Index (-)	Maximum Annual PM2.5 Concentration ($\mu g/m^3$)
2020-2021	0.4151	0.1235	**73.8**	**1.2**	**0.083**	**0.51**

Maximum Impacts at MEI Location - With Mitigation

Emissions Year	Maximum Concentrations: Exhaust PM10/DPM ($\mu g/m^3$)	Maximum Concentrations: Fugitive PM2.5 ($\mu g/m^3$)	Cancer Risk (per million): Infant/Child	Cancer Risk (per million): Adult	Hazard Index (-)	Maximum Annual PM2.5 Concentration ($\mu g/m^3$)
2020-2021	0.0355	0.0523	**6.3**	**0.1**	**0.007**	**0.09**

965 Weeks Street, East Palo Alto, CA - Construction Impacts - Without Mitigation
Maximum DPM Cancer Risk and PM2.5 Calculations From Construction
Impacts at Off-Site MEI Location - 1.5 meter receptor height

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10^{-6}

Where: C_{air} = concentration in air $(\mu g/m^3)$
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

Values

	Infant/Child				Adult
Age -->	**3rd Trimester**	**0 - 2**	**2 - 9**	**2 - 16**	**16 - 30**
Parameter					
ASF =	10	10	3	3	1
CPF =	1.10E+00	1.10E+00	1.10E+00	1.10E+00	1.10E+00
DBR* =	361	1090	631	572	261
A =	1	1	1	1	1
EF =	350	350	350	350	350
AT =	70	70	70	70	70
FAH =	1.00	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Construction Cancer Risk by Year - Maximum Impact Receptor Location

			Infant/Child - Exposure Information				Adult - Exposure Information				
							Modeled				
Exposure Year	**Exposure Duration (years)**	**Age**	**DPM Conc (ug/m3) Year**	**DPM Conc (ug/m3) Annual**	**Age Sensitivity Factor**	**Infant/Child Cancer Risk (per million)**	**DPM Conc (ug/m3) Year**	**DPM Conc (ug/m3) Annual**	**Age Sensitivity Factor**	**Adult Cancer Risk (per million)**
0	0.25	-0.25 - 0*	2020-2021	0.4151	10	5.65	2020-2021	0.4151	-	-
1	1	0 - 1	2020-2021	0.4151	10	68.18	2020-2021	0.4151	1	1.19
2	1	1 - 2			10	0.00			1	0.00
3	1	2 - 3			3	0.00			1	0.00
4	1	3 - 4			3	0.00			1	0.00
5	1	4 - 5			3	0.00			1	0.00
6	1	5 - 6			3	0.00			1	0.00
7	1	6 - 7			3	0.00			1	0.00
8	1	7 - 8			3	0.00			1	0.00
9	1	8 - 9			3	0.00			1	0.00
10	1	9 - 10			3	0.00			1	0.00
11	1	10 - 11			3	0.00			1	0.00
12	1	11 - 12			3	0.00			1	0.00
13	1	12 - 13			3	0.00			1	0.00
14	1	13 - 14			3	0.00			1	0.00
15	1	14 - 15			3	0.00			1	0.00
16	1	15 - 16			3	0.00			1	0.00
17	1	16-17			1	0.00			1	0.00
18	1	17-18			1	0.00			1	0.00
19	1	18-19			1	0.00			1	0.00
20	1	19-20			1	0.00			1	0.00
21	1	20-21			1	0.00			1	0.00
22	1	21-22			1	0.00			1	0.00
23	1	22-23			1	0.00			1	0.00
24	1	23-24			1	0.00			1	0.00
25	1	24-25			1	0.00			1	0.00
26	1	25-26			1	0.00			1	0.00
27	1	26-27			1	0.00			1	0.00
28	1	27-28			1	0.00			1	0.00
29	1	28-29			1	0.00			1	0.00
30	1	29-30			1	0.00			1	0.00
Total Increased Cancer Risk						**73.8**				**1.19**

Maximum		
Hazard Index	**Fugitive PM2.5**	**Total PM2.5**
0.083	0.1235	0.514

* Third trimester of pregnancy

965 Weeks Street, East Palo Alto, CA - Construction Impacts - With Mitigation
Maximum DPM Cancer Risk and PM2.5 Calculations From Construction
Impacts at Off-Site MEI Location - 1.5 meter receptor height

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10^{-6}

Where: C_{air} = concentration in air $(\mu g/m^3)$
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

Values

	Infant/Child				Adult
Age -->	**3rd Trimester**	**0 - 2**	**2 - 9**	**2 - 16**	**16 - 30**
Parameter					
ASF =	10	10	3	3	1
CPF =	1.10E+00	1.10E+00	1.10E+00	1.10E+00	1.10E+00
DBR* =	361	1090	631	572	261
A =	1	1	1	1	1
EF =	350	350	350	350	350
AT =	70	70	70	70	70
FAH =	1.00	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Construction Cancer Risk by Year - Maximum Impact Receptor Location

			Infant/Child - Exposure Information				Adult - Exposure Information			
						Infant/Child		Modeled		Adult
Exposure	**Exposure Duration**		**DPM Conc (ug/m3)**		**Age Sensitivity**	**Cancer Risk**	**DPM Conc (ug/m3)**		**Age Sensitivity**	**Cancer Risk**
Year	**(years)**	**Age**	**Year**	**Annual**	**Factor**	**(per million)**	**Year**	**Annual**	**Factor**	**(per million)**
0	0.25	-0.25 - 0*	2020-2021	0.0355	10	0.48	2020-2021	0.0355	-	-
1	1	0 - 1	2020-2021	0.0355	10	5.83	2020-2021	0.0355	1	0.10
2	1	1 - 2			10	0.00			1	0.00
3	1	2 - 3			3	0.00			1	0.00
4	1	3 - 4			3	0.00			1	0.00
5	1	4 - 5			3	0.00			1	0.00
6	1	5 - 6			3	0.00			1	0.00
7	1	6 - 7			3	0.00			1	0.00
8	1	7 - 8			3	0.00			1	0.00
9	1	8 - 9			3	0.00			1	0.00
10	1	9 - 10			3	0.00			1	0.00
11	1	10 - 11			3	0.00			1	0.00
12	1	11 - 12			3	0.00			1	0.00
13	1	12 - 13			3	0.00			1	0.00
14	1	13 - 14			3	0.00			1	0.00
15	1	14 - 15			3	0.00			1	0.00
16	1	15 - 16			3	0.00			1	0.00
17	1	16-17			1	0.00			1	0.00
18	1	17-18			1	0.00			1	0.00
19	1	18-19			1	0.00			1	0.00
20	1	19-20			1	0.00			1	0.00
21	1	20-21			1	0.00			1	0.00
22	1	21-22			1	0.00			1	0.00
23	1	22-23			1	0.00			1	0.00
24	1	23-24			1	0.00			1	0.00
25	1	24-25			1	0.00			1	0.00
26	1	25-26			1	0.00			1	0.00
27	1	26-27			1	0.00			1	0.00
28	1	27-28			1	0.00			1	0.00
29	1	28-29			1	0.00			1	0.00
30	1	29-30			1	0.00			1	0.00
Total Increased Cancer Risk						**6.3**				**0.10**

* Third trimester of pregnancy

Maximum		
Hazard Index	**Fugitive PM2.5**	**Total PM2.5**
0.007	0.0523	0.086

Attachment 4: Screening Community Risk Calculations

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

BAAAQMD RESPONSE TO SSIF REQUEST

Risk & Hazard Stationary Source Inquiry Form

This form is required when users request stationary source data from BAAQMD

This form is to be used with the BAAQMD's Google Earth stationary source screening tables.

Click here for guidance on coducting risk & hazard screening, including roadways & freeways, refer to the District's Risk & Hazard Analysis flow chart.

Click here for District's Recommended Methods for Screening and Modeling Local Risks and Hazards document.

Table A: Requester Contact Information

Date of Request	**8/22/2019**
Contact Name	Casey Divine
Affiliation	Illingworth & Rodkin, Inc.
Phone	707-794-0400 x103
Email	cdivine@illingworthrodkin.com
Project Name	965 Weeks St
Address	965 Weeks St
City	E. Palo Alto
County	San Mateo
Type (residential, commercial, mixed use, industrial, etc.)	Residential
Project Size (# of units or building square feet)	136du

Comments: First section sources found in 2014 google earth stationary source tool, second section sources found on 2017 stationary sources website

For Air District assistance, the following steps must be completed:

1. Complete all the contact and project information requested in Table A. Incomplete forms will not be processed. Please include a project site map.

2. Download and install the free program Google Earth, **http://www.google.com/earth/download/ge/,** and then download the county specific Google Earth stationary source application files from the District's website, **http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Tools-and-Methodology.aspx.** The small points on the map represent stationary sources permitted by the District (Map A on right). These permitted sources include diesel back-up generators, gas stations, dry cleaners, boilers, printers, auto spray booths, etc. Click on a point to view the source's Information Table, including the name, location, and preliminary estimated cancer risk, hazard index, and PM2.5 concentration.

3. Find the project site in Google Earth by inputting the site's address in the Google Earth search box.

4. Identify stationary sources within at least a 1000ft radius of project site. Verify that the location of the source on the map matches with the source's address in the Information Table, by using the Google Earth address search box to confirm the source's address location. Please report any mapping errors to the District.

5. List the stationary source information in Table B blue section only.

6. Note that a small percentage of the stationary sources have Health Risk Screening Assessment (HRSA) data INSTEAD of screening level data. These sources will be noted by an asterisk next to the Plant Name (Map B on right). If HRSA values are presented, these values have already been modeled and cannot be adjusted further.

7. Email this completed form to District staff. District staff will provide the most recent risk, hazard, and PM2.5 data that are available for the source(s). If this information or data are not available, source emissions data will be provided. Staff will respond to inquiries within three weeks.

Note that a public records request received for the same stationary source information will cancel the processing of your SSIF request.

Submit forms, maps, and questions to Areana Flores at 415-749-4616, or aflores@baaqmd.gov

Table B: Google Earth data

Distance from Receptor (meters) or MEI[1]	FACID (Plant No.)	FNAME	FSTREET	Cancer Risk[2]	Hazard Risk[2]	$PM_{2.5}$[2]	Source No.[3]	Type of Source[4]	Fuel Code[5]	Status/Comments
TBD	1434	J's Product Painting Co, Inc	75 Demeter Street	0.001	0	0.0014				Shutdown
TBD	610	Cal Spray Inc	1905 Bay Road					Spray booth		emissions file attached. Use Health Risk Calculator.

Footnotes:
1. Maximally exposed individual
2. These Cancer Risk, Hazard Index, and PM2.5 columns represent the values in the Google Earth Plant Information Table.
3. Each plant may have multiple permits and sources.
4. Permitted sources include diesel back-up generators, gas stations, dry cleaners, boilers, printers, auto spray booths, etc.
5. Fuel codes: 98 = diesel, 189 = Natural Gas.
6. If a Health Risk Screening Assessment (HRSA) was completed for the source, the application number will be listed here.
7. The date that the HRSA was completed.
8. Engineer who completed the HRSA. For District purposes only.
9. All HRSA completed before 1/5/2010 need to be multiplied by an age sensitivity factor of 1.7.
10. The HRSA "Chronic Health" number represents the Hazard Index.
11. Further information about common sources:
    a. Sources that only include diesel internal combustion engines can be adjusted using the BAAQMD's Diesel Multiplier worksheet.
    b. The risk from natural gas boilers used for space heating when <25 MM BTU/hr would have an estimated cancer risk of one in a million or less, and a chronic hazard index of 0.003 or
    c. BAAQMD Reg 11 Rule 16 required that all co-residential (sharing a wall, floor, ceiling or is in the same building as a residential unit) dry cleaners cease use of perc on July 1, 2010. Therefore, there is no cancer risk, hazard or PM2.5 concentrations from co-residential dry cleaning businesses in the BAAQMD.
    d. Non co-residential dry cleaners must phase out use of perc by Jan. 1, 2023. Therefore, the risk from these dry cleaners does not need to be factored in over a 70-year period, but instead should
    e. Gas stations can be adjusted using BAAQMD's Gas Station Distance Mulitplier worksheet.
    f. Unless otherwise noted, exempt sources are considered insignificant. See BAAQMD Reg 2 Rule 1 for a list of exempt sources.
    g. This spray booth is considered to be insignificant.

Date last updated:
03/13/2018

BAY AREA AIR QUALITY MANAGEMENT DISTRICT Printed: AUG 30, 2019
DETAIL POLLUTANTS - ABATED
MOST RECENT P/O APPROVED (2019)

Cal Spray Inc (P# 610)

S#	SOURCE NAME / MATERIAL	SOURCE CODE / DATE	POLLUTANT	CODE	LBS/DAY
	THROUGHPUT				
1	SPRAY BOOTH				
		SG22A048			
			Butyl acetate	48	0.00E+00
			Methyl isoamyl ketone	331	0.00E+00
		SG22A131			
			Glycols	131	0.00E+00
			Organic liquid evap - othe	201	0.00E+00
		SG22C063			
			Cellosolve acetate	63	0.00E+00
			Organic liquid evap - othe	201	0.00E+00
		SG52A332			
			Methyl isobutyl ketone (MI	170	0.00E+00
			Ethyl isoamyl ketone	332	0.00E+00
2	SPRAY BOOTH				
		SG22A048			
			Butyl acetate	48	0.00E+00
			Methyl isoamyl ketone	331	0.00E+00
		SG22A131			
			Glycols	131	0.00E+00
			Organic liquid evap - othe	201	0.00E+00
		SG22C063			
			Cellosolve acetate	63	0.00E+00
			Organic liquid evap - othe	201	0.00E+00
		SG52A332			
			Methyl isobutyl ketone (MI	170	4.45E-02
			Organic liquid evap - othe	201	4.56E-01
			Ethyl isoamyl ketone	332	5.56E-02
3	SPRAY BOOTH				
		SG22A048			
			Butyl acetate	48	0.00E+00
			Methyl isoamyl ketone	331	0.00E+00
		SG22A131			
			Glycols	131	0.00E+00
			Organic liquid evap - othe	201	0.00E+00
		SG22C063			
			Cellosolve acetate	63	0.00E+00
			Organic liquid evap - othe	201	0.00E+00
		SG52A318			
			Organic liquid evap - othe	201	0.00E+00
			Hydrocarbon - mixtures, ot	318	3.74E-01

4	SPRAY BOOTH				
		SG22A048			
			Butyl acetate	48	3.04E-01
			Organic liquid evap - othe	201	1.90E-01
			Methyl isoamyl ketone	331	2.66E-01
		SG22A131			
			Glycols	131	2.76E-03
			Organic liquid evap - othe	201	0.00E+00
		SG22C063			
			Cellosolve acetate	63	4.44E-02
			Organic liquid evap - othe	201	0.00E+00
12	Confined Abrasive Blasting	Operation			
		G7109475			
			Particulates (part not spe	1990	3.78E-05

PLANT TOTAL:

lbs/day	Pollutant
3.04E-01	Butyl acetate (48)
4.44E-02	Cellosolve acetate (63)
5.56E-02	Ethyl isoamyl ketone (332)
2.76E-03	Glycols (131)
3.74E-01	Hydrocarbon - mixtures, other/not spec (318)
2.66E-01	Methyl isoamyl ketone (331)
4.45E-02	Methyl isobutyl ketone (MIBK) (170)
6.46E-01	Organic liquid evap - other/not spec (201)
3.78E-05	Particulates (part not spec elsewhere) (1990)

Step 1:
Enter Facility Data

Plant Name	**Cal Spray Inc**
Plant No.	**610**

Step 3:
Specify Source Type

Does facility have only diesel backup generators?	**no**
Is this analysis for a gas station?	**no**

Step 2:
Estimate Distance

What is the distance (m) from the facility boundary to the MEI?	**300**

Step 5:
Read Estimates

Total Cancer Risk	**0.241**	per 1,000,000
Total Chronic Hazard	**0.000**	
Total PM2.5 Concentration	**0.000**	µg/m^3

Step 2:
Enter Emissions Data

Chemical Name	CAS No.	Rate	Risk	Hazard	Concentration
	(dashes removed)	(lb/day)	(# / 1,000,000)	(index)	(µg/m3)
Fine Particulate Matter (PM2.5)		3.78E-05			0.00
1,1,1-Trichloroethane	71556	0.00E+00			
1,1,2,2-Tetrachloroethane	79345	0.00E+00			
1,1,2-Trichloroethane	79005	0.00E+00			
1,1-Dichloroethane	75343	0.00E+00			
1,1-Dichloroethylene	75354	0.00E+00			
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268879	0.00E+00			
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001020	0.00E+00			
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822469	0.00E+00			
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562394	0.00E+00			
1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673897	0.00E+00			
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227286	0.00E+00			
1,2,3,4,7,8-Hexachlorodibenzofuran	70648269	0.00E+00			
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653857	0.00E+00			
1,2,3,6,7,8-Hexachlorodibenzofuran	57117449	0.00E+00			
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408743	0.00E+00			
1,2,3,7,8,9-Hexachlorodibenzofuran	72918219	0.00E+00			
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321764	0.00E+00			
1,2,3,7,8-Pentachlorodibenzofuran	57117416	0.00E+00			
1,2-Dibromo-3-chloropropane	96128	0.00E+00			
1,2-Dibromoethane	106934	0.00E+00			
1,2-Dichloroethane	107062	0.00E+00			
1,2-Epoxybutane	106887	0.00E+00			
1,3-Butadiene	106990	0.00E+00			
1,3-Propane sultone	1120714	0.00E+00			
1,4-Dichlorobenzene	106467	0.00E+00			
1,4-Dioxane	123911	0.00E+00			
1,6-Dinitropyrene	42397648	0.00E+00			
1,8-Dinitropyrene	42397659	0.00E+00			
1-Nitropyrene	5522430	0.00E+00			
2',3,4,4',5-PeCB	65510443	0.00E+00			
2,3',4,4',5,5'-HxCB	52663726	0.00E+00			
2,3',4,4',5-PeCB	31508006	0.00E+00			
2,3,3',4,4',5'-HxCB	69782907	0.00E+00			
2,3,3',4,4',5,5'-HpCB	39635319	0.00E+00			
2,3,3',4,4',5-HxCB	38380084	0.00E+00			
2,3,3',4,4'-PeCB	32598144	0.00E+00			
2,3,4,4',5-PeCB	74472370	0.00E+00			
2,3,4,6,7,8-hexachlorodibenzofuran	60851345	0.00E+00			
2,3,4,7,8-Pentachlorodibenzofuran	57117314	0.00E+00			
2,3,7,8-Tetrachlorodibenzo-p-dioxin and related compo	1746016	0.00E+00			
2,3,7,8-Tetrachlorodibenzofuran	51207319	0.00E+00			
2,4,6-Trichlorophenol	88062	0.00E+00			
2,4-Diaminoanisole	615054	0.00E+00			
2,4-Diaminotoluene	95807	0.00E+00			
2,4-Dinitrotoluene	121142	0.00E+00			
2-Aminoanthraquinone	117793	0.00E+00			
2-Nitrofluorene	607578	0.00E+00			
3,3',4,4',5,5'-HxCB	32774166	0.00E+00			
3,3',4,4',5-PeCB	57465288	0.00E+00			
3,3',4,4'-TCB	32598133	0.00E+00			
3,3-Dichlorobenzidine	91941	0.00E+00			
3,4,4'5-TCB	70362504	0.00E+00			
3-Methylcholanthrene	56495	0.00E+00			
4,4-Methylene bis(2-chloroaniline)	101144	0.00E+00			
4,4-Methylenedianiline	101779	0.00E+00			
4-Chloro-ortho-phenylenediamine	95830	0.00E+00			
4-Dimethylaminoazobenzene	60117	0.00E+00			
4-Nitropyrene	57835924	0.00E+00			
5-Methylchrysene	3697243	0.00E+00			
5-Nitroacenaphthene	602879	0.00E+00			
6-Nitrochrysene	7496028	0.00E+00			
7,12-Dimethylbenz(a)anthracene	57976	0.00E+00			
7H-dibenzo(c,g)carbazole	194592	0.00E+00			
Acetaldehyde	75070	0.00E+00			
Acetamide	60355	0.00E+00			
Acrolein	107028	0.00E+00			
Acrylamide	79061	0.00E+00			
Acrylic Acid	79107	0.00E+00			
Acrylonitrile	107131	0.00E+00			
Allyl chloride	107051	0.00E+00			
Ammonia	7664417	0.00E+00			
Aniline	62533	0.00E+00			
Arsenic	7440382	0.00E+00			
Arsine	7784421	0.00E+00			
Asbestos [1/(100 PCM fibers/m^3)]^-1	1332214	0.00E+00			
Benz(a)anthracene	56553	0.00E+00			
Benzene	71432	0.00E+00			
Benzidine	92875	0.00E+00			
Benzo(a)pyrene	50328	0.00E+00			
Benzo(b)fluoranthene	205992	0.00E+00			
Benzo(j)fluoranthene	205823	0.00E+00			
Benzo(k)fluoranthene	207089	0.00E+00			
Benzyl Chloride	100447	0.00E+00			
Beryllium	7440417	0.00E+00			
Bis(2-chloroethyl) Ether	111444	0.00E+00			
Bis(2-chloromethyl) Ether	542881	0.00E+00			
Cadmium	7440439	0.00E+00			
Caprolactam	105602	0.00E+00			
Carbon Disulfide	75150	0.00E+00			
Carbon Monoxide	630080	0.00E+00			
Carbon Tetrachloride	56235	0.00E+00			
Carbonyl Sulfide	463581	0.00E+00			
Chlorinated paraffins (Avg. chain length C12; approx. 6	108171262	0.00E+00			
Chlorine	7782505	0.00E+00			
Chlorine Dioxide	10049044	0.00E+00			
Chlorite	7758192	0.00E+00			
Chlorobenzene	108907	0.00E+00			
Chlorodibromomethane	124481	0.00E+00			
Chloroethane (Ethyl Chloride)	75003	0.00E+00			
Chloroform	67663	0.00E+00			
Chloropicrin	76062	0.00E+00			
Chromic Trioxide	1333820	0.00E+00			
Chromium-hexavalent	18540299	0.00E+00			
Barium chromate2	10294403	0.00E+00			
Calcium chromate2	13765190	0.00E+00			
Lead chromate2	7758976	0.00E+00			
Sodium dichromate2	10588019	0.00E+00			
Strontium chromate2	7789062	0.00E+00			
CHROMIC TRIOXIDE (as chromic acid mist)	1333820	0.00E+00			

	Chrysene	218019	0.00E+00				
	Copper	7440508	0.00E+00				
	Copper and Copper Compounds	7440508	0.00E+00				
	Cresol Mixtures	1319773	0.00E+00				
	Cupferron	135206	0.00E+00				
	Cyanide	57125	0.00E+00				
	Di(2-ethylhexyl)phthalate	117817	0.00E+00				
	Dibenz(a-h)acridine	226368	0.00E+00				
	Dibenz(a-h)anthracene	53703	0.00E+00				
	Dibenz(a-j)acridine	224420	0.00E+00				
	Dibenzo(a-e)pyrene	192654	0.00E+00				
	Dibenzo(a-h)pyrene	189640	0.00E+00				
	Dibenzo(a-i)pyrene	189559	0.00E+00				
	Dibenzo(a-l)pyrene	191300	0.00E+00				
	Diesel Exhaust Particulate	85105	0.00E+00				
	Diethanolamine	111422	0.00E+00				
	Dimethylformamide	68122	0.00E+00				
	Direct Black 38 (Technical Grade)	1937377	0.00E+00				
	Direct Blue 6 (Technical Grade)	2602462	0.00E+00				
	Direct Brown 95 (Technical Grade)	16071866	0.00E+00				
	Epichlorohydrin	106898	0.00E+00				
	Ethylbenzene	100414	0.00E+00				
	Ethylene Glycol	107211	0.00E+00				
	Ethylene Glycol Monobutyl Ether	111762	0.00E+00				
	Ethylene Glycol Monoethyl Ether	110805	0.00E+00				
	Ethylene Glycol Monoethyl Ether Acetate	111159	4.44E-02	2.80E-04			
	Ethylene Glycol Monomethyl Ether	109864	0.00E+00				
	Ethylene Glycol Monomethyl Ether Acetate	110496	0.00E+00				
	Ethylene Oxide	75218	0.00E+00				
	Ethylene Thiourea	96457	0.00E+00				
	Fluorides	1101	0.00E+00				
	Formaldehyde (gas)	50000	0.00E+00				
	Glutaraldehyde	111308	0.00E+00				
	Hexachlorobenzene	118741	0.00E+00				
	Hexachlorocyclohexane (Technical Grade)	608731	0.00E+00				
	Hexachlorocyclohexane- Alpha Isomer	319846	0.00E+00				
	Hexachlorocyclohexane- Beta Isomer	319857	0.00E+00				
	Hexachlorocyclohexane- Gamma Isomer	58899	0.00E+00				
	Hydrazine	302012	0.00E+00				
	Hydrogen Chloride	7647010	0.00E+00				
	Hydrogen Cyanide	74908	0.00E+00				
	Hydrogen Fluoride	7664393	0.00E+00				
	Hydrogen Selenide	7783075	0.00E+00				
	Hydrogen Sulfide	7783064	0.00E+00				
	Indeno(1-2-3-c-d)pyrene	193395	0.00E+00				
	Isophorone	78591	0.00E+00				
	Isopropyl Alcohol	67630	0.00E+00				
	Lead Acetate	301042	0.00E+00				
	Lead and Lead Compounds	7439921	0.00E+00				
	Lead Phosphate	7446277	0.00E+00				
	Lead Subacetate	1335326	0.00E+00				
	m-CRESOL	108394	0.00E+00				
	m-XYLENE	108383	0.00E+00				
	Maleic Anhydride	108316	0.00E+00				
	Manganese & Manganese Compounds	7439965	0.00E+00				
	Mercury (Inorganic)	7439976	0.00E+00				
	Mercuric chloride	7487947	0.00E+00				
	Methanol	67561	0.00E+00				
	Methyl Bromide	74839	0.00E+00				
	Methyl Ethyl Ketone	78933	0.00E+00				
	Methyl Isocyanate	624839	0.00E+00				
	Methyl Tertiary Butyl Ether	1634044	0.00E+00				
	Methylene Chloride (Dichloromethane)	75092	0.00E+00				
	Methylene Diphenyl Isocyanate (MDI)	101688	0.00E+00				
	Michlers Ketone	90948	0.00E+00				
	n-Hexane	110543	0.00E+00				
	n-Nitroso-n-methylethylamine	10595956	0.00E+00				
	n-Nitrosodi-n-Butylamine	924163	0.00E+00				
	n-Nitrosodi-n-Propylamine	621647	0.00E+00				
	n-Nitrosodiethylamine	55185	0.00E+00				
	n-Nitrosodimethylamine	62759	0.00E+00				
	n-Nitrosodiphenylamine	86306	0.00E+00				
	n-Nitrosomorpholine	59892	0.00E+00				
	n-Nitrosopiperidine	100754	0.00E+00				
	n-Nitrosopyrrolidine	930552	0.00E+00				
	Naphthalene	91203	0.00E+00				
	Nickel and Nickel Compounds	7440020	0.00E+00				
	Nickel acetate	373024	0.00E+00				
	Nickel carbonate	3333673	0.00E+00				
	Nickel carbonyl	13463393	0.00E+00				
	Nickel hydroxide	12054487	0.00E+00				
	Nickelocene	1271289	0.00E+00				
	Nickel Oxide	1313991	0.00E+00				
	Nickel Refinery Dust	1146	0.00E+00				
	Nickel Subsulfide	12035722	0.00E+00				
	Nitric Acid	7697372	0.00E+00				
	Nitrogen Dioxide	10102440	0.00E+00				
	o-CRESOL	95487	0.00E+00				
	o-XYLENE	95476	0.00E+00				
	Oleum	8014957	0.00E+00				
	Ozone	10028156	0.00E+00				
	p-Chloro-o-toluidine	95692	0.00E+00				
	p-Cresidine	120718	0.00E+00				
	p-CRESOL	106445	0.00E+00				
	p-Nitrosodiphenylamine	156105	0.00E+00				
	p-XYLENE	106423	0.00E+00				
	Pentachlorophenol	87865	0.00E+00				
	Perchloroethylene	127184	0.00E+00				
	Phenol	108952	0.00E+00				
	Phosgene	75445	0.00E+00				
	Phosphine	7803512	0.00E+00				
	Phosphoric Acid	7664382	0.00E+00				
	Phthalic Anhydride	85449	0.00E+00				
	Polychlorinated Biphenyls	1336363	0.00E+00				
	Potassium Bromate	7758012	0.00E+00				
	Propylene	115071	0.00E+00				
	Propylene Glycol Monomethyl Ether	107982	0.00E+00				
	Propylene oxide	75569	0.00E+00				
	Selenium	7782492	0.00E+00				
	Selenium sulfide	7446346	0.00E+00				
	Silica (crystalline, respirable)	7631869	0.00E+00				
	Sodium hydroxide	1310732	0.00E+00				
	Styrene	100425	0.00E+00				
	Sulfates	9960	0.00E+00				
	Sulfur Dioxide	7446095	0.00E+00				
	Sulfuric Acid	7664939	0.00E+00				
	Sulfur Trioxide	7446719	0.00E+00				
	Tertiary-butyl acetate	540885	3.04E-01	1.83E+00			
	Tetrachloroethylene	127184	0.00E+00				
	Thioacetamide	62555	0.00E+00				
	Toluene	108883	0.00E+00				
	Toluene Diisocyanates	26471625	0.00E+00				
	Toluene Diisocyanates (2,4 and 2, 6)	584849	0.00E+00				
	Toluene Diisocyanates (2,4 and 2, 6)	91087	0.00E+00				
	Trichloroethylene	79016	0.00E+00				
	Triethylamine	121448	0.00E+00				
	Urethane	51796	0.00E+00				
	Vanadium pentoxide	1314621	0.00E+00				

Vinyl acetate	108054	0.00E+00			
Vinyl chloride	75014	0.00E+00			
Xylenes (technical mixture of m, o, p-isomers)	1330207	0.00E+00			
Vanadium	7440622	0.00E+00			
TOTAL UNADJUSTED Risk Values			**1.827**	**0.000**	**0.000**

Gasoline Dispensing Facility (GDF) Distance Multiplier Tool: This distance multiplier tool refines the screening values for cancer risk and chronic hazard index found in the District's Stationary Source Screening Analysis Tool for GDF's, to represent adjusted risk and hazard impacts that can be expected with farther distances from the source of emissions.

Gas Station

Distance (meters)	Distance (feet)	Distance adjustment multiplier	Enter Risk or Hazard	Adjusted Risk or Hazard
0	0.0	1.000		0.0000
5	16.4	1.000		0.0000
10	32.8	1.000		0.0000
15	49.2	1.000		0.0000
20	65.6	1.000		0.0000
25	82.0	0.728		0.0000
30	98.4	0.559		0.0000
35	114.8	0.445		0.0000
40	131.2	0.365		0.0000
45	147.6	0.305		0.0000
50	164.0	0.260		0.0000
55	180.4	0.225		0.0000
60	196.9	0.197		0.0000
65	213.3	0.174		0.0000
70	229.7	0.155		0.0000
75	246.1	0.139		0.0000
80	262.5	0.126		0.0000
85	278.9	0.114		0.0000
90	295.3	0.104		0.0000
95	311.7	0.096		0.0000
100	328.1	0.088		0.0000
105	344.5	0.082		0.0000
110	360.9	0.076		0.0000
115	377.3	0.071		0.0000
120	393.7	0.066		0.0000
125	410.1	0.062		0.0000
130	426.5	0.058		0.0000
135	442.9	0.055		0.0000
140	459.3	0.052		0.0000
145	475.7	0.049		0.0000
150	492.1	0.046		0.0000
155	508.5	0.044		0.0000
160	524.9	0.042		0.0000
165	541.3	0.040		0.0000
170	557.7	0.038		0.0000
175	574.1	0.036		0.0000
180	590.6	0.034		0.0000
185	607.0	0.033		0.0000
190	623.4	0.031		0.0000
195	639.8	0.030		0.0000
200	656.2	0.029		0.0000
205	672.6	0.028		0.0000
210	689.0	0.027		0.0000
215	705.4	0.026		0.0000
220	721.8	0.025		0.0000
225	738.2	0.024		0.0000
230	754.6	0.023		0.0000
235	771.0	0.022		0.0000
240	787.4	0.022		0.0000
245	803.8	0.021		0.0000
250	820.2	0.020		0.0000
255	836.6	0.020		0.0000
260	853.0	0.019		0.0000
265	869.4	0.018		0.0000
270	885.8	0.018		0.0000
275	902.2	0.017		0.0000
280	918.6	0.017		0.0000
285	935.0	0.016		0.0000
290	951.4	0.016		0.0000
295	967.8	0.015		0.0000
300	984.3	0.015		0.0000

Diesel Internal Combustion (IC) Engine Distance Multiplier Tool: This distance multiplier tool refines the screening values for cancer risk and $PM_{2.5}$ concentrations found in the District's Stationary Source Screening Analysis Tool for permitted facilities which contain only diesel IC engines, to represent adjusted risk and hazard impacts that can be expected with farther distances from the source of emissions.

Diesel Backup Generator

Distance (meters)	Distance (feet)	Distance adjustment multiplier	Enter Risk or Hazard	Adjusted Risk or Hazard	Enter PM2.5 Concentration	Adjusted PM2.5 Concentration
0	0.0	1.000		0		0
5	16.4	1.000		0		0
10	32.8	1.000		0		0
15	49.2	1.000		0		0
20	65.6	1.000		0		0
25	82.0	0.85		0		0
30	98.4	0.73		0		0
35	114.8	0.64		0		0
40	131.2	0.58		0		0
50	164.0	0.5		0		0
60	196.9	0.41		0		0
70	229.7	0.31		0		0
80	262.5	0.28		0		0
90	295.3	0.25		0		0
100	328.1	0.22		0		0
110	360.9	0.18		0		0
120	393.7	0.16		0		0
130	426.5	0.15		0		0
140	459.3	0.14		0		0
150	492.1	0.12		0		0
160	524.9	0.1		0		0
180	590.6	0.09		0		0
200	656.2	0.08		0		0
220	721.8	0.07		0		0
240	787.4	0.06		0		0
260	853.0	0.05		0		0
280	918.6	0.04		0		0

Generic Distance Multiplier Tool: This distance multiplier tool refines the screening values to represent adjusted risk and hazard impacts that can be expected with farther distances from the source of emissions.

Generic Case

Distance (meters)	Distance (feet)	Multiplier
0	0.0	1.000
5	16.4	1.000
10	32.8	0.883
15	49.2	0.855
20	65.6	0.827
25	82.0	0.801
30	98.4	0.775
35	114.8	0.750
40	131.2	0.726
45	147.6	0.702
50	164.0	0.679
55	180.4	0.658
60	196.9	0.636
65	213.3	0.616
70	229.7	0.596
75	246.1	0.577
80	262.5	0.558
85	278.9	0.540
90	295.3	0.523
95	311.7	0.506
100	328.1	0.489
105	344.5	0.474
110	360.9	0.458
115	377.3	0.444
120	393.7	0.429
125	410.1	0.415
130	426.5	0.402
135	442.9	0.389
140	459.3	0.376
145	475.7	0.364
150	492.1	0.353
155	508.5	0.341
160	524.9	0.330
165	541.3	0.319
170	557.7	0.309
175	574.1	0.299
180	590.6	0.290
185	607.0	0.280
190	623.4	0.271
195	639.8	0.262
200	656.2	0.254
205	672.6	0.246
210	689.0	0.238
215	705.4	0.230
220	721.8	0.223
225	738.2	0.216
230	754.6	0.209
235	771.0	0.202
240	787.4	0.195
245	803.8	0.189
250	820.2	0.183
255	836.6	0.177
260	853.0	0.171
265	869.4	0.166
270	885.8	0.160
275	902.2	0.155
280	918.6	0.150
285	935.0	0.145
290	951.4	0.141
295	967.8	0.136
300	984.3	0.132

Chemical Name	CAS Number	(µg/m3) Chronic Inhalation REL	(mg/kg-day)-1 Inhalation Slope Factor
1,1,1-Trichloroethane	71556	1000	
1,1,2,2-Tetrachloroethane	79345		0.2
1,1,2-Trichloroethane	79005		0.057
1,1-Dichloroethane	75343		0.0057
1,1-Dichloroethylene	75354	70	
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268879	0.13	39
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001020	0.13	39
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822469	0.004	1300
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562394	0.004	1300
1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673897	0.004	1300
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227286	0.0004	13000
1,2,3,4,7,8-Hexachlorodibenzofuran	70648269	0.0004	13000
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653857	0.0004	13000
1,2,3,6,7,8-Hexachlorodibenzofuran	57117449	0.0004	13000
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408743	0.0004	13000
1,2,3,7,8,9-Hexachlorodibenzofuran	72918219	0.0004	13000
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321764	0.00004	130000
1,2,3,7,8-Pentachlorodibenzofuran	57117416	0.0013	3900
1,2-Dibromo-3-chloropropane	96128		7
1,2-Dibromoethane	106934	0.8	0.25
1,2-Dichloroethane	107062	400	0.072
1,2-Epoxybutane	106887	20	
1,3-Butadiene	106990	2	0.6
1,3-Propane sultone	1120714		2.4
1,4-Dichlorobenzene	106467	800	0.04
1,4-Dioxane	123911	3000	0.027
1,6-Dinitropyrene	42397648		39
1,8-Dinitropyrene	42397659		3.9
1-Nitropyrene	5522430		0.39
2',3,4,4',5-PeCB	65510443	1.3	3.9
2,3',4,4',5,5'-HxCB	52663726	1.3	3.9
2,3',4,4',5-PeCB	31508006	1.3	3.9
2,3,3',4,4',5'-HxCB	69782907	1.3	3.9
2,3,3',4,4',5,5'-HpCB	39635319	1.3	3.9
2,3,3',4,4',5-HxCB	38380084	1.3	3.9
2,3,3',4,4'-PeCB	32598144	1.3	3.9
2,3,4,4',5-PeCB	74472370	1.3	3.9
2,3,4,6,7,8-hexachlorodibenzofuran	60851345	0.0004	13000
2,3,4,7,8-Pentachlorodibenzofuran	57117314	0.00013	39000
2,3,7,8-Tetrachlorodibenzo-p-dioxin and related compound	1746016	0.00004	130000
2,3,7,8-Tetrachlorodibenzofuran	51207319	0.0004	13000
2,4,6-Trichlorophenol	88062		0.07
2,4-Diaminoanisole	615054		0.023

2,4-Diaminotoluene	95807		4
2,4-Dinitrotoluene	121142		0.31
2-Aminoanthraquinone	117793		0.033
2-Nitrofluorene	607578		0.039
3,3',4,4',5,5'-HxCB	32774166	0.0013	3900
3,3',4,4',5-PeCB	57465288	0.0004	13000
3,3',4,4'-TCB	32598133	0.04	13
3,3-Dichlorobenzidine	91941		1.2
3,4,4'5-TCB	70362504	0.13	39
3-Methylcholanthrene	56495		220
4,4-Methylene bis(2-chloroaniline)	101144		1.5
4,4-Methylenedianiline	101779	20	1.6
4-Chloro-ortho-phenylenediamine	95830		0.016
4-Dimethylaminoazobenzene	60117		4.6
4-Nitropyrene	57835924		0.39
5-Methylchrysene	3697243		3.9
5-Nitroacenaphthene	602879		0.13
6-Nitrochrysene	7496028		39
7,12-Dimethylbenz(a)anthracene	57976		250
7H-dibenzo(c,g)carbazole	194592		3.9
Acetaldehyde	75070	140	0.01
Acetamide	60355		0.07
Acrolein	107028	0.35	
Acrylamide	79061		4.5
Acrylic Acid	79107		
Acrylonitrile	107131	5	1
Allyl chloride	107051		0.021
Ammonia	7664417	200	
Aniline	62533		0.0057
Arsenic	7440382	0.015	12
Arsine	7784421	0.015	
Asbestos [1/(100 PCM fibers/m^3)]^-1	1332214		220
Benz(a)anthracene	56553		0.39
Benzene	71432	3	0.1
Benzidine	92875		500
Benzo(a)pyrene	50328		3.9
Benzo(b)fluoranthene	205992		0.39
Benzo(j)fluoranthene	205823		0.39
Benzo(k)fluoranthene	207089		0.39
Benzyl Chloride	100447		0.17
Beryllium	7440417	0.007	8.4
Bis(2-chloroethyl) Ether	111444		2.5
Bis(2-chloromethyl) Ether	542881		46
Cadmium	7440439	0.02	15
Caprolactam	105602	2.2	
Carbon Disulfide	75150	800	
Carbon Monoxide	630080		

Carbon Tetrachloride	56235	40	0.15
Carbonyl Sulfide	463581	10	
Chlorinated paraffins (Avg. chain length C12; approx. 60 per	108171262		0.089
Chlorine	7782505	0.2	
Chlorine Dioxide	10049044	0.6	
Chlorite	7758192		
Chlorobenzene	108907	1000	
Chlorodibromomethane	124481		0.094
Chloroethane (Ethyl Chloride)	75003	30000	
Chloroform	67663	300	0.019
Chloropicrin	76062	0.4	
Chromic Trioxide	1333820	0.001	290
Chromium-hexavalent	18540299	0.2	510
Barium chromate2	10294403	0.2	510
Calcium chromate2	13765190	0.2	510
Lead chromate2	7758976	0.2	510
Sodium dichromate2	10588019	0.2	510
Strontium chromate2	7789062	0.2	510
CHROMIC TRIOXIDE (as chromic acid mist)	1333820	0.002	510
Chrysene	218019		0.039
Copper	7440508		
Copper and Copper Compounds	7440508		
Cresol Mixtures	1319773	600	
Cupferron	135206		0.22
Cyanide	57125	9	
Di(2-ethylhexyl)phthalate	117817		0.0084
Dibenz(a-h)acridine	226368		0.39
Dibenz(a-h)anthracene	53703		4.1
Dibenz(a-j)acridine	224420		0.39
Dibenzo(a-e)pyrene	192654		3.9
Dibenzo(a-h)pyrene	189640		39
Dibenzo(a-i)pyrene	189559		39
Dibenzo(a-l)pyrene	191300		39
Diesel Exhaust Particulate	85105	5	1.1
Diethanolamine	111422	3	
Dimethylformamide	68122	80	
Direct Black 38 (Technical Grade)	1937377		500
Direct Blue 6 (Technical Grade)	2602462		500
Direct Brown 95 (Technical Grade)	16071866		500
Epichlorohydrin	106898	3	0.08
Ethylbenzene	100414	2000	0.0087
Ethylene Glycol	107211	400	
Ethylene Glycol Monobutyl Ether	111762	82	
Ethylene Glycol Monoethyl Ether	110805	70	
Ethylene Glycol Monoethyl Ether Acetate	111159	300	
Ethylene Glycol Monomethyl Ether	109864	60	
Ethylene Glycol Monomethyl Ether Acetate	110496	90	

Ethylene Oxide	75218	30	0.31
Ethylene Thiourea	96457		0.045
Fluorides	1101	13	
Formaldehyde (gas)	50000	9	0.021
Glutaraldehyde	111308	0.08	
Hexachlorobenzene	118741		1.8
Hexachlorocyclohexane (Technical Grade)	608731		4
Hexachlorocyclohexane- Alpha Isomer	319846		4
Hexachlorocyclohexane- Beta Isomer	319857		4
Hexachlorocyclohexane- Gamma Isomer	58899		1.1
Hydrazine	302012	0.2	17
Hydrogen Chloride	7647010	9	
Hydrogen Cyanide	74908	9	
Hydrogen Fluoride	7664393	14	
Hydrogen Selenide	7783075		
Hydrogen Sulfide	7783064	10	
Indeno(1-2-3-c-d)pyrene	193395		0.39
Isophorone	78591	2000	
Isopropyl Alcohol	67630	7000	
Lead Acetate	301042		0.042
Lead and Lead Compounds	7439921		0.042
Lead Phosphate	7446277		0.042
Lead Subacetate	1335326		0.042
m-CRESOL	108394	600	
m-XYLENE	108383	700	
Maleic Anhydride	108316	0.7	
Manganese & Manganese Compounds	7439965	0.09	
Mercury (Inorganic)	7439976	0.03	
Mercuric chloride	7487947	0.03	
Methanol	67561	4000	
Methyl Bromide	74839	5	
Methyl Ethyl Ketone	78933		
Methyl Isocyanate	624839	1	
Methyl Tertiary Butyl Ether	1634044	8000	0.0018
Methylene Chloride (Dichloromethane)	75092	400	0.0035
Methylene Diphenyl Isocyanate (MDI)	101688	0.08	
Michlers Ketone	90948		0.86
n-Hexane	110543	7000	
n-Nitroso-n-methylethylamine	10595956		22
n-Nitrosodi-n-Butylamine	924163		11
n-Nitrosodi-n-Propylamine	621647		7
n-Nitrosodiethylamine	55185		36
n-Nitrosodimethylamine	62759		16
n-Nitrosodiphenylamine	86306		0.009
n-Nitrosomorpholine	59892		6.7
n-Nitrosopiperidine	100754		9.4
n-Nitrosopyrrolidine	930552		2.1

Naphthalene	91203	9	0.12
Nickel and Nickel Compounds	7440020	0.014	0.91
Nickel acetate	373024	0.014	0.91
Nickel carbonate	3333673	0.014	0.91
Nickel carbonyl	13463393	0.014	0.91
Nickel hydroxide	12054487	0.014	0.91
Nickelocene	1271289	0.014	0.91
Nickel Oxide	1313991	0.02	0.91
Nickel Refinery Dust	1146	0.014	0.91
Nickel Subsulfide	12035722	0.014	0.91
Nitric Acid	7697372		
Nitrogen Dioxide	10102440		
o-CRESOL	95487	600	
o-XYLENE	95476	700	
Oleum	8014957		
Ozone	10028156		
p-Chloro-o-toluidine	95692		0.27
p-Cresidine	120718		0.15
p-CRESOL	106445	600	
p-Nitrosodiphenylamine	156105		0.022
p-XYLENE	106423	700	
Pentachlorophenol	87865		0.018
Perchloroethylene	127184	35	0.021
Phenol	108952	200	
Phosgene	75445		
Phosphine	7803512	0.8	
Phosphoric Acid	7664382	7	
Phthalic Anhydride	85449	20	
Polychlorinated Biphenyls	1336363		2
Potassium Bromate	7758012		0.49
Propylene	115071	3000	
Propylene Glycol Monomethyl Ether	107982	7000	
Propylene oxide	75569	30	0.013
Selenium	7782492	20	
Selenium sulfide	7446346	20	
Silica (crystalline, respirable)	7631869	3	
Sodium hydroxide	1310732		
Styrene	100425	900	
Sulfates	9960		
Sulfur Dioxide	7446095		
Sulfuric Acid	7664939	1	
Sulfur Trioxide	7446719	1	
Tertiary-butyl acetate	540885		0.0047
Tetrachloroethylene	127184	35	0.021
Thioacetamide	62555		6.1
Toluene	108883	300	
Toluene Diisocyanates	26471625	0.07	0.039

Toluene Diisocyanates (2,4 and 2, 6)	584849	0.008	0.039
Toluene Diisocyanates (2,4 and 2, 6)	91087	0.008	0.039
Trichloroethylene	79016	600	0.007
Triethylamine	121448	200	
Urethane	51796		1
Vanadium pentoxide	1314621		
Vinyl acetate	108054	200	
Vinyl chloride	75014		0.27
Xylenes (technical mixture of m, o, p-isomers)	1330207	700	
Vanadium	7440622		

Step 1:
Enter Facility Data

Plant Name	**Cal Spray Inc**
Plant No.	**610**

Step 3:
Specify Source Type

Does facility have only diesel backup generators?	**no**
Is this analysis for a gas station?	**no**

Step 2:
Estimate Distance

What is the distance (m) from the facility boundary to the MEI?	**250**

Step 5:
Read Estimates

Total Cancer Risk	**0.334**	per 1,000,000
Total Chronic Hazard	**0.000**	
Total PM2.5 Concentration	**0.000**	µg/m^3

Step 2:
Enter Emissions Data

Chemical Name	CAS No.	Rate	Risk	Hazard	Concentration
	(dashes removed)	(lb/day)	(# / 1,000,000)	(index)	(µg/m3)
Fine Particulate Matter (PM2.5)		3.78E-05			0.00
1,1,1-Trichloroethane	71556	0.00E+00			
1,1,2,2-Tetrachloroethane	79345	0.00E+00			
1,1,2-Trichloroethane	79005	0.00E+00			
1,1-Dichloroethane	75343	0.00E+00			
1,1-Dichloroethylene	75354	0.00E+00			
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	3268879	0.00E+00			
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	39001020	0.00E+00			
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin	35822469	0.00E+00			
1,2,3,4,6,7,8-Heptachlorodibenzofuran	67562394	0.00E+00			
1,2,3,4,7,8,9-Heptachlorodibenzofuran	55673897	0.00E+00			
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin	39227286	0.00E+00			
1,2,3,4,7,8-Hexachlorodibenzofuran	70648269	0.00E+00			
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	57653857	0.00E+00			
1,2,3,6,7,8-Hexachlorodibenzofuran	57117449	0.00E+00			
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin	19408743	0.00E+00			
1,2,3,7,8,9-Hexachlorodibenzofuran	72918219	0.00E+00			
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	40321764	0.00E+00			
1,2,3,7,8-Pentachlorodibenzofuran	57117416	0.00E+00			
1,2-Dibromo-3-chloropropane	96128	0.00E+00			
1,2-Dibromoethane	106934	0.00E+00			
1,2-Dichloroethane	107062	0.00E+00			
1,2-Epoxybutane	106887	0.00E+00			
1,3-Butadiene	106990	0.00E+00			
1,3-Propane sultone	1120714	0.00E+00			
1,4-Dichlorobenzene	106467	0.00E+00			
1,4-Dioxane	123911	0.00E+00			
1,6-Dinitropyrene	42397648	0.00E+00			
1,8-Dinitropyrene	42397659	0.00E+00			
1-Nitropyrene	5522430	0.00E+00			
2',3,4,4',5-PeCB	65510443	0.00E+00			
2,3',4,4',5,5'-HxCB	52663726	0.00E+00			
2,3',4,4',5-PeCB	31508006	0.00E+00			
2,3,3',4,4',5'-HxCB	69782907	0.00E+00			
2,3,3',4,4',5,5'-HpCB	39635319	0.00E+00			
2,3,3',4,4',5-HxCB	38380084	0.00E+00			
2,3,3',4,4'-PeCB	32598144	0.00E+00			
2,3,4,4',5-PeCB	74472370	0.00E+00			
2,3,4,6,7,8-hexachlorodibenzofuran	60851345	0.00E+00			
2,3,4,7,8-Pentachlorodibenzofuran	57117314	0.00E+00			
2,3,7,8-Tetrachlorodibenzo-p-dioxin and related compo	1746016	0.00E+00			
2,3,7,8-Tetrachlorodibenzofuran	51207319	0.00E+00			
2,4,6-Trichlorophenol	88062	0.00E+00			
2,4-Diaminoanisole	615054	0.00E+00			
2,4-Diaminotoluene	95807	0.00E+00			
2,4-Dinitrotoluene	121142	0.00E+00			
2-Aminoanthraquinone	117793	0.00E+00			
2-Nitrofluorene	607578	0.00E+00			
3,3',4,4',5,5'-HxCB	32774166	0.00E+00			
3,3',4,4',5-PeCB	57465288	0.00E+00			
3,3',4,4'-TCB	32598133	0.00E+00			
3,3-Dichlorobenzidine	91941	0.00E+00			
3,4,4'5-TCB	70362504	0.00E+00			
3-Methylcholanthrene	56495	0.00E+00			
4,4-Methylene bis(2-chloroaniline)	101144	0.00E+00			
4,4-Methylenedianiline	101779	0.00E+00			
4-Chloro-ortho-phenylenediamine	95830	0.00E+00			
4-Dimethylaminoazobenzene	60117	0.00E+00			
4-Nitropyrene	57835924	0.00E+00			
5-Methylchrysene	3697243	0.00E+00			
5-Nitroacenaphthene	602879	0.00E+00			
6-Nitrochrysene	7496028	0.00E+00			
7,12-Dimethylbenz(a)anthracene	57976	0.00E+00			
7H-dibenzo(c,g)carbazole	194592	0.00E+00			
Acetaldehyde	75070	0.00E+00			
Acetamide	60355	0.00E+00			
Acrolein	107028	0.00E+00			
Acrylamide	79061	0.00E+00			
Acrylic Acid	79107	0.00E+00			
Acrylonitrile	107131	0.00E+00			
Allyl chloride	107051	0.00E+00			
Ammonia	7664417	0.00E+00			
Aniline	62533	0.00E+00			
Arsenic	7440382	0.00E+00			
Arsine	7784421	0.00E+00			
Asbestos [1/(100 PCM fibers/m^3)]^-1	1332214	0.00E+00			
Benz(a)anthracene	56553	0.00E+00			
Benzene	71432	0.00E+00			
Benzidine	92875	0.00E+00			
Benzo(a)pyrene	50328	0.00E+00			
Benzo(b)fluoranthene	205992	0.00E+00			
Benzo(j)fluoranthene	205823	0.00E+00			
Benzo(k)fluoranthene	207089	0.00E+00			
Benzyl Chloride	100447	0.00E+00			
Beryllium	7440417	0.00E+00			
Bis(2-chloroethyl) Ether	111444	0.00E+00			
Bis(2-chloromethyl) Ether	542881	0.00E+00			
Cadmium	7440439	0.00E+00			
Caprolactam	105602	0.00E+00			
Carbon Disulfide	75150	0.00E+00			
Carbon Monoxide	630080	0.00E+00			
Carbon Tetrachloride	56235	0.00E+00			
Carbonyl Sulfide	463581	0.00E+00			
Chlorinated paraffins (Avg. chain length C12; approx. 6	108171262	0.00E+00			
Chlorine	7782505	0.00E+00			
Chlorine Dioxide	10049044	0.00E+00			
Chlorite	7758192	0.00E+00			
Chlorobenzene	108907	0.00E+00			
Chlorodibromomethane	124481	0.00E+00			
Chloroethane (Ethyl Chloride)	75003	0.00E+00			
Chloroform	67663	0.00E+00			
Chloropicrin	76062	0.00E+00			
Chromic Trioxide	1333820	0.00E+00			
Chromium-hexavalent	18540299	0.00E+00			
Barium chromate2	10294403	0.00E+00			

Calcium chromate2	13765190	0.00E+00				
Lead chromate2	7758976	0.00E+00				
Sodium dichromate2	10588019	0.00E+00				
Strontium chromate2	7789062	0.00E+00				
CHROMIC TRIOXIDE (as chromic acid mist)	1333820	0.00E+00				
Chrysene	218019	0.00E+00				
Copper	7440508	0.00E+00				
Copper and Copper Compounds	7440508	0.00E+00				
Cresol Mixtures	1319773	0.00E+00				
Cupferron	135206	0.00E+00				
Cyanide	57125	0.00E+00				
Di(2-ethylhexyl)phthalate	117817	0.00E+00				
Dibenz(a-h)acridine	226368	0.00E+00				
Dibenz(a-h)anthracene	53703	0.00E+00				
Dibenz(a-j)acridine	224420	0.00E+00				
Dibenzo(a-e)pyrene	192654	0.00E+00				
Dibenzo(a-h)pyrene	189640	0.00E+00				
Dibenzo(a-i)pyrene	189559	0.00E+00				
Dibenzo(a-l)pyrene	191300	0.00E+00				
Diesel Exhaust Particulate	85105	0.00E+00				
Diethanolamine	111422	0.00E+00				
Dimethylformamide	68122	0.00E+00				
Direct Black 38 (Technical Grade)	1937377	0.00E+00				
Direct Blue 6 (Technical Grade)	2602462	0.00E+00				
Direct Brown 95 (Technical Grade)	16071866	0.00E+00				
Epichlorohydrin	106898	0.00E+00				
Ethylbenzene	100414	0.00E+00				
Ethylene Glycol	107211	0.00E+00				
Ethylene Glycol Monobutyl Ether	111762	0.00E+00				
Ethylene Glycol Monoethyl Ether	110805	0.00E+00				
Ethylene Glycol Monoethyl Ether Acetate	111159	4.44E-02	2.80E-04			
Ethylene Glycol Monomethyl Ether	109864	0.00E+00				
Ethylene Glycol Monomethyl Ether Acetate	110496	0.00E+00				
Ethylene Oxide	75218	0.00E+00				
Ethylene Thiourea	96457	0.00E+00				
Fluorides	1101	0.00E+00				
Formaldehyde (gas)	50000	0.00E+00				
Glutaraldehyde	111308	0.00E+00				
Hexachlorobenzene	118741	0.00E+00				
Hexachlorocyclohexane (Technical Grade)	608731	0.00E+00				
Hexachlorocyclohexane- Alpha Isomer	319846	0.00E+00				
Hexachlorocyclohexane- Beta Isomer	319857	0.00E+00				
Hexachlorocyclohexane- Gamma Isomer	58899	0.00E+00				
Hydrazine	302012	0.00E+00				
Hydrogen Chloride	7647010	0.00E+00				
Hydrogen Cyanide	74908	0.00E+00				
Hydrogen Fluoride	7664393	0.00E+00				
Hydrogen Selenide	7783075	0.00E+00				
Hydrogen Sulfide	7783064	0.00E+00				
Indeno(1-2-3-c-d)pyrene	193395	0.00E+00				
Isophorone	78591	0.00E+00				
Isopropyl Alcohol	67630	0.00E+00				
Lead Acetate	301042	0.00E+00				
Lead and Lead Compounds	7439921	0.00E+00				
Lead Phosphate	7446277	0.00E+00				
Lead Subacetate	1335326	0.00E+00				
m-CRESOL	108394	0.00E+00				
m-XYLENE	108383	0.00E+00				
Maleic Anhydride	108316	0.00E+00				
Manganese & Manganese Compounds	7439965	0.00E+00				
Mercury (Inorganic)	7439976	0.00E+00				
Mercuric chloride	7487947	0.00E+00				
Methanol	67561	0.00E+00				
Methyl Bromide	74839	0.00E+00				
Methyl Ethyl Ketone	78933	0.00E+00				
Methyl Isocyanate	624839	0.00E+00				
Methyl Tertiary Butyl Ether	1634044	0.00E+00				
Methylene Chloride (Dichloromethane)	75092	0.00E+00				
Methylene Diphenyl Isocyanate (MDI)	101688	0.00E+00				
Michlers Ketone	90948	0.00E+00				
n-Hexane	110543	0.00E+00				
n-Nitroso-n-methylethylamine	10595956	0.00E+00				
n-Nitrosodi-n-Butylamine	924163	0.00E+00				
n-Nitrosodi-n-Propylamine	621647	0.00E+00				
n-Nitrosodiethylamine	55185	0.00E+00				
n-Nitrosodimethylamine	62759	0.00E+00				
n-Nitrosodiphenylamine	86306	0.00E+00				
n-Nitrosomorpholine	59892	0.00E+00				
n-Nitrosopiperidine	100754	0.00E+00				
n-Nitrosopyrrolidine	930552	0.00E+00				
Naphthalene	91203	0.00E+00				
Nickel and Nickel Compounds	7440020	0.00E+00				
Nickel acetate	373024	0.00E+00				
Nickel carbonate	3333673	0.00E+00				
Nickel carbonyl	13463393	0.00E+00				
Nickel hydroxide	12054487	0.00E+00				
Nickelocene	1271289	0.00E+00				
Nickel Oxide	1313991	0.00E+00				
Nickel Refinery Dust	1146	0.00E+00				
Nickel Subsulfide	12035722	0.00E+00				
Nitric Acid	7697372	0.00E+00				
Nitrogen Dioxide	10102440	0.00E+00				
o-CRESOL	95487	0.00E+00				
o-XYLENE	95476	0.00E+00				
Oleum	8014957	0.00E+00				
Ozone	10028156	0.00E+00				
p-Chloro-o-toluidine	95692	0.00E+00				
p-Cresidine	120718	0.00E+00				
p-CRESOL	106445	0.00E+00				
p-Nitrosodiphenylamine	156105	0.00E+00				
p-XYLENE	106423	0.00E+00				
Pentachlorophenol	87865	0.00E+00				
Perchloroethylene	127184	0.00E+00				
Phenol	108952	0.00E+00				
Phosgene	75445	0.00E+00				
Phosphine	7803512	0.00E+00				
Phosphoric Acid	7664382	0.00E+00				
Phthalic Anhydride	85449	0.00E+00				
Polychlorinated Biphenyls	1336363	0.00E+00				
Potassium Bromate	7758012	0.00E+00				
Propylene	115071	0.00E+00				
Propylene Glycol Monomethyl Ether	107982	0.00E+00				
Propylene oxide	75569	0.00E+00				
Selenium	7782492	0.00E+00				
Selenium sulfide	7446346	0.00E+00				
Silica (crystalline, respirable)	7631869	0.00E+00				
Sodium hydroxide	1310732	0.00E+00				
Styrene	100425	0.00E+00				
Sulfates	9960	0.00E+00				
Sulfur Dioxide	7446095	0.00E+00				
Sulfuric Acid	7664939	0.00E+00				
Sulfur Trioxide	7446719	0.00E+00				

Tertiary-butyl acetate	540885	3.04E-01	1.83E+00		
Tetrachloroethylene	127184	0.00E+00			
Thioacetamide	62555	0.00E+00			
Toluene	108883	0.00E+00			
Toluene Diisocyanates	26471625	0.00E+00			
Toluene Diisocyanates (2,4 and 2, 6)	584849	0.00E+00			
Toluene Diisocyanates (2,4 and 2, 6)	91087	0.00E+00			
Trichloroethylene	79016	0.00E+00			
Triethylamine	121448	0.00E+00			
Urethane	51796	0.00E+00			
Vanadium pentoxide	1314621	0.00E+00			
Vinyl acetate	108054	0.00E+00			
Vinyl chloride	75014	0.00E+00			
Xylenes (technical mixture of m, o, p-isomers)	1330207	0.00E+00			
Vanadium	7440622	0.00E+00			
TOTAL UNADJUSTED Risk Values			**1.827**	**0.000**	**0.000**